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THE (POSITIVE) DESIGN ENVIRONMENT AS A PREREQUISITE OF DESIGN ORIENTATION

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Abstract

Design is a human-centered activity. Every design project starts with the analysis of user needs and preferences. This means that design orientation of a company should also be positively related to company's business results. However, in most transitional countries of Central and Eastern Europe (CEECs), design environment is not supported, there is no clear national design policy, design implementation in companies varies, and there is no constant measurement of design impact. The main interest of this paper is to research the level of design implementation in Croatian companies related to the managerial approach and business results, because such research is usually undertaken in more developed countries. The study focuses on the perception of management. This quantitative research has been carried out using an Internet survey to examine managers and CEOs from Croatian companies in different industries. The results show positive relations between design environment and design orientation of a company and a significant impact of management.

Key words: *Design environment, design orientation, design implementation, transitional countries, management*

JEL Classification: *M310; O310; Z110*

1. Introduction

In most countries, entrepreneurs have recently been recognizing the benefits of design. The progressive use of design, from operational to strategic level, in public and private sector organizations is also receiving attention in marketing management. The topics of this study are design orientation and design implementation in Croatian companies, as well as the impact of design environment. This paper aims to highlight the role of design as one of the core elements of innovation and market success, as well as the impact of the national design environment on companies concerning design management. The contribution of the paper to literature is a research undertaken in Croatian companies, as such research has not yet been done and is usually undertaken in more developed countries.

After a short introduction to the historical context of Croatian economic development, the paper deals with literature overview on the issues of design orientation, design environment, design implementation, and design management. We then propose the initial model of relationships with hypotheses grounded on theory. The third section deals with the research

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methodology and sample description. The final part entails the results and discussion. In the conclusion, we highlight the contribution of this paper, with limitations and recommendations for future research.

Substantial reforms and strong economic fundamentals of Croatia's reforms since the country's 1991 independence have been significant, given the historical context. Croatia rapidly implemented an ambitious reform program based on the gradual opening of trade and investment and the creation of open market economy, driven by commitments taken during its World Trade Organization (WTO) accession negotiations and preparations for its strategic goal of acceding to the European Union (EU). Croatia joined the European Union in 2013 as the 28th member state. Throughout the EU accession process, Croatia engaged in many structural reforms. However, its economy is still in transition, with slower growth than countries at a similar stage of development, such as Bulgaria or Romania. Croatia's GDP per capita remains one of the lowest in the EU. Once the industrial powerhouse of the former Yugoslavia, Croatia has transformed into a service-based economy that relies on low-productivity tourism sector for jobs and income. In fact, Croatia's economy is by far the most reliant on foreign visitors among its European rivals.

The overdependence on one sector increases the vulnerability of Croatia to external shocks as evidenced by the impact of the global financial crisis in 2008–2014. The national system of innovation as well as investment in research and development is low by EU standards. An additional problem is the high rate of skilled workforce that keep emigrating. Small and medium-sized enterprises (SMEs) are the backbone of Croatian economy in terms of their number, employment, and turnover. The productivity of SMEs, however, is disturbingly low, as is the ability of Croatian SMEs to internationalize through export. Structural reforms, the encouragement of competition and entrepreneurship, and the strengthening of institutions that would enable better functioning of market economy are preconditions for creating opportunities in a competitive environment. Diversification is a challenge the Croatian economy faces, as do other countries from the region (OECD 2019).

The general situation in the Republic of Croatia concerning innovation policy will also be observed with regard to the Innovation Union Scoreboard. Based on the scoreboard, the EU evaluates and compares the innovation characteristics of 28 member states and some other non-member European countries. According to the 2020 edition of the innovation scoreboard, the EU's innovation performance continues to increase at a steady pace, with growing convergence between EU countries. On average, EU innovation performance has increased by 8.9% since 2012[1]. However, Croatia is a moderate innovator with innovation score value 64, which puts the country in the 23rd place out of 28 EU countries. Innovators and Firm investments are the strongest Croatian innovation dimensions, while the lowest indicator scores are for Exports of knowledge-intensive services, Design applications, Venture capital expenditures, and Lifelong learning. Design application in Croatia, according to the European Innovation Scoreboard 2020 is 10.74.[2] In comparison, Slovenia's (a neighboring ex-Yugoslavian republic) score value is 46.71. Also, according to the Global Competitiveness Index Ranking 4.0 from 2019, covering 114 economies, Croatia ranked 64th as the lowest EU state.[3]

Therefore, the research questions are: What is the perception of design by managers in Croatian companies and do they use design on multiple levels? What is their opinion about the design environment in Croatia: political, economic, social, and technological? Are they willing to accept new approaches to management, for instance, creative design thinking methods? What about the national design strategy? Does design environment have a significant impact on design orientation of companies in whole? Our research focuses on the perception of design issues by the management. Therefore, all variables in the study have been operationalized from the managers' point of view.

2. Literature review and hypotheses development

The role of design has been and still is a subject of discussion. From those who see design as the key element of every organization's strategy and the most vital tool of innovation in business to those who believe that design is a key element of manipulation in making poor-quality products and services desirable, thereby promoting consumerism in the most negative sense.

However, design should in first place be human-centered, providing better solutions for different needs of end-users. According to the International Council of Design, Ico-D: "Design is a constantly evolving and dynamic discipline. The professionally trained designer applies intent to create the visual, material, spatial and digital environment, cognizant of the experiential, employing interdisciplinary and hybrid approaches to the theory and practice of design. They understand the cultural, ethical, social, economic and ecological impact of their endeavors and their ultimate responsibility towards people and the

planet across both commercial and non-commercial spheres".[4] The complex tasks of design can be seen as a conscious decision-making process by which information (an idea) is transformed into an outcome, be it tangible (product) or intangible (service) (von Stamm 2008).

Depending on the context, design implies an objective, the intention of designing, particularly in analytical and creative phases. It also denotes as a process, a drawing, a sketch, or a model in the execution phase that gives form to an idea. The techniques and methods of design combine both the logical scientific approach and the intuitive artistic approach with cultural dimensions. Because design is at the same time a problem-solving activity, creative ideation, as well as the coordination between different professionals involved in the process, it has also been considered a bridge between art and science (Borja de Mozota 2003a). Design influences user behavior in many ways and indirectly shapes the society. According to Best (2006), design plays a key role in shaping the world and generating new products, but also systems and services, in response to different market conditions and opportunities. The final result of a designer's work is not forming a product but shaping social behavioral rules (Keller 1975, p. 29).

2.1. Design orientation

According to some scholars (e.g., Gorb 1990; Borja de Mozota 2003a), design orientation can be defined as an approach by the management which relies on design as a strategic tool. Design oriented companies are those that incorporate their design process into their business strategy (Moll et al. 2007).

Recently, there have been numerous studies in different countries that confirm the positive impact of design orientation on innovation capabilities. The important role of design has also been recognized in the Europe 2020 Growth Strategy which led to the European Commission's Action Plan for Design-Driven Innovation (EC 2013). The European Commission's Innobarometer, a tool that measures innovation-related activities in EU businesses (2001–2016), also gives evidence of the positive effects of design on innovation.[5]

2.2. Design Environment

In most countries, the complex nature of design has been acknowledged, as well as its benefits, be it economic, cultural, social, or environmental. Recent design policies in European countries tend to be more focused than before, emphasizing design as a strategic tool for innovation, economic progress, and job creation (Quartz+Co. 2011).

Raising awareness about design and its positive impact to a broader audience is the basic level of design policy, which a government should engage in to support design implementation. Design promotion initiatives usually include activities from professional organizations such as design awards, conferences, publications, exhibitions, design weeks, etc.

At the next level of design policy, design support is targeted at design education and design research institutions. Initiatives are usually driven by the Ministry of Education and/or the Ministry of Culture. They focus on promoting certain design disciplines (e.g., design thinking), teaching methods, specific research topics, attracting foreign students, etc. At the same level of design policy, design support is targeted at companies (usually SMEs). The initiatives and activities here are usually facilitated by a national design council, a design center, a design foundation or a design promotion institute offering, for instance, consulting or advisory services, matchmaking between designers and businesses, education and training, grants and scholarships, dissemination of information about the economic value of design, libraries and information centers (including material libraries), incubation facilities, exhibition areas, and not least – tax credits (Quartz+Co. 2011, p.15).

One of the most significant barriers to the take-up of design in policy is measuring the return on investment at micro and macro levels in both, private and public sectors. Although there is an increasing bank of knowledge that can contribute to evidence-based policymaking, additional statistics on design impact are required (Whicher, Swiatek, and Cawood 2015, p. 11). (…) Examining design investment by enterprises is the first step to investigating comparable empirical evidence on design's contribution to the European economy (Whicher et al. 2015). Design policy should have a clear vision linked to a specific and tangible set of actions as well as clear targets, financing mechanisms, allocation of tasks, and the timeframe for implementation and evaluation process. With the increased interest in design at multiple levels of governance across the EU, there is also an opportunity for European countries to strengthen their respective economies by increasing the innovativeness and performance of their companies. However, huge differences persist between more and less developed European countries. Although different design support programs for SMEs show significant results in economic growth, what remains a specific problem is how to help SMEs to develop their capabilities to

become more design-led in developing innovations, and more competitive. Several countries have developed different models of support worldwide, but the crucial issues remain: how to employ tools, what challenges and opportunities are related to the design integration process, and how the management of design integration takes place (Gerlitz 2016, p. 27). Concerning the strong impact of the national design policy and the multiple elements of design environment, we propose:

H1: Design environment is positively related to design orientation of a company.

The Croatian example shows us that the country had a strong tradition of design in terms of professional work, professional associations, promotional exhibitions, and even in terms of design theory during the period of a socialist regime and planned economy when it was a part of Yugoslavia. However, when Croatia became independent, a clear, government-regulated design policy was not implemented. In 2007, there was an initiative by design associations and professionals to establish the Croatian Design Center. However, the center failed to gather support from the government and did not have a strong impact on Croatian design policy at the national level. During the process of joining the EU, the Croatian Chamber of Commerce established its own design center (2012). Still, the center did not play an important role in creating a national design policy and the initiative did not last for a long time – the center was unfortunately closed in 2016. Strong initiatives still exist from different groups of design professionals or individuals and design associations in the form of design events, exhibitions, and festivals (Design District Zagreb, Plan D, Zagreb Design Week, etc.). It is likely that this unsupportive design climate – in terms of design programs focused on entrepreneurs – probably also has a negative impact on design implementation in many companies, especially SMEs.

2.3. Design Implementation

Some authors recognize three main levels of design implementation inside a company: Borja de Mozota (2003a) differentiates design as styling, design as process, and design as strategy. Best (2006) identifies the operational, tactical, and strategic level of design. At the operational level, we design products, services, and customer experiences. At the tactical level, design is concerned with systems and processes inside the company, and at the strategic level, we design policy and mission. Design Ladder, a staircase model created by the Danish Design Centre (Ramlau and Melander 2004) has been used for measuring design implementation in various studies and practices because of its simplicity. It identifies four steps: the first is *no design*, the second is *design as styling*, the third is *design integrated into the company,* and the highest, fourth step, is *design as a strategic tool*. The Design Management Staircase model by Kootstra (2009) describes the four levels of design management inspired by Design Ladder, Level 1: No design management; Level 2: Design management as project; Level 3: Design management as function and Level 4: Design management as culture/strategic management of design (Design Management Europe Survey 2009). According to the Design Management Institute (2015), there are three so-called zones of design-use in practice. The first is the tactical value of design – which serves for developing new products and delivering new services. This aspect of design is concerned mostly with aesthetic value and functionality. In the second, organizational value, design is a connector or integrator of business functions. It looks at customer experience as a platform for innovation. The third, strategic value, looks at design as a strategic resource for new business models. Since the DMI model has been developed for use in companies, the stages of their model have also been used in our questionnaire.

A design strategy is the effective allocation and coordination of design resources and activities to accomplish a firm's objectives of creating its appropriate public and internal identities, its product offerings and its environments (Olson, Cooper, and Slater 1998). Turner (2009) suggests that design takes up the role of coordinator, facilitator, and interpreter, rather than a leader. As it touches so many parts of business, everyone in the organization should understand and value the contribution design can make and companies need to integrate it into their DNA (in Von Stamm 2008, p.117).

To manage design at a strategy level, according to Borja de Mozota (2003a), is to manage the contribution of design to the strategy formulation process. What needs to be defined is the responsibility and leadership assigned to design and its contribution to the organizational culture, there needs to be a search for opportunities for design innovation and multiply demonstrations of identity through design. This third, highest level of design management establishes links between design, corporate communications, and top management. Borja de Mozota proposes two models for strategic positioning of design: the innate and the acquired. While in the innate model the strategic role of design is part of the founder's entrepreneurial

plan from the beginning and these companies have a strong design spirit in all of their organizational processes, the acquired model is the one in which design is learned and accepted by experience and shows a progressive valorization inside the company. Based on the role of design implementation which confirms the design orientation, we propose the following hypothesis:

H2: Design orientation of a company is positively related to the level of design implementation.

In a world characterized by rapid change and uncertainty, strategic design has emerged as a means of implementing a range of new possibilities – rapid iteration of ideas, incorporating end users, and working across knowledge silos – for global corporations and governments. For leaders and managers, strategic design provides an alternative means to see the big picture, consider all aspects of a complex problem, and implement solutions for change and long-term sustainability (Huppatz 2020, p. 126). There has been a number of case-studies [e.g., Borja de Mozota 2003; Moll et al 2007; Acklin 2011; Venkatsh et al. 2012], and research on a national level in different countries [e.g., The Economic Effects of Design, Danish Design Centre 2004; Design Council, UK: Designing Britain 2004, The Cox Review of Creativity in Business 2005, Innovation by Design. 2015, The Design Economy 2018 -The State of Design in the UK; Design Innovation Research, Ireland 2007; Design Management Europe Survey by Kootstra: An analysis of design management practices in Europe 2009; Mapping of International Design Policies, by Quartz + Co, Denmark 2011; Westcott et al. DMI Design Value Scorecard 2013; EU Commission: Design Policy Monitor, 2015], which give evidence about the positive relation between the level of design implementation and business results. A research undertaken by the British Design Council in 2012 shows that, on average, businesses in UK that invest in design have approximately a 50% better long-term financial performance than businesses that do not. An evaluation report from 2014 on the role of design in the commercialization of science and technology demonstrates that design accelerates commercialization and increases value of products and services (Design Council 2012, 2014). Therefore, we propose:

H3: The level of design implementation is positively related to business results.

2.4. The Design Management Issues

According to the Design Management Institute "design management encompasses the ongoing processes, business decisions, and strategies that enable innovation and create effectively-designed products, services, communications, environments, and brands that enhance our quality of life and provide organizational success. The scope of design management ranges from the tactical management of corporate design functions and design agencies, including design operations, staff, methods and processes–to the strategic advocacy of design across the organization as a key differentiator and driver of organizational success. It includes the use of design thinking–or using design processes to solve general business problems". [6]

In order to assist design managers to better identify their organization's level of design maturity, the design maturity matrix has been developed. It serves as an assessment tool to determine where design currently delivers value across three functional areas and provides a foundation for setting and achieving future design goals. Furthermore, the Design Value System with three components has been developed and made available at the dmi website in order to help companies: The Design Value Index, The Design Maturity Matrix and the Design Value Map.[7] Managers have a better perception of design in companies that implement design in more levels. We therefore propose:

H4: The level of design implementation is positively related to perceived design value.

Several mindsets, according to different authors, have been identified as an important part of design thinking methodology. In particular, design thinking is human-centered, mindful of process, empathetic, includes storytelling, has a culture of prototyping, is biased toward action, includes radical open-minded collaboration among disciplines, integrative thinking, is optimistic, challenges constraints and supports creative solutions (Brown 2009; Nussbaum 2004; Martin 2009).

As an approach, design thinking relies on the capacities we all have, but that are overlooked and abandoned in favor of more conventional problem-solving practices. Not only does it focus on creating products and services that are human-centered, but the process itself is also deeply human. Design thinking relies on our ability to be intuitive, recognize patterns, construct ideas that have emotional meaning as well as being functional, and express ourselves in media, other than with words or symbols. There are three main phases in the design thinking process: inspiration, ideation, and implementation. In the inspiration phase, a problem is looked at as an opportunity which

motivates the search for solutions. Ideation is the process of generating, developing, and testing ideas, and implementation leads us from the project stage into real people's lives (Brown and Wyatt 2010).

Unlike critical thinking, which is a process of analysis associated with the deconstruction of ideas, design thinking is a creative process based upon the construction of ideas. By disallowing judgments, design thinking eliminates the fear of failure and encourages maximum input and participation. Non-routine, out-of-box ideas are welcome, since these often pave the way for the most creative solutions. Every individual acts as a designer and design thinking is a process of applying design methodologies to solving problems in different life situations and practices (Ilipinari et al. 2011).

Design thinking is typically understood as an expansive, free-flow process that results in various creative ideas for innovation. However, Chen and Venkatesh (2013) offer an alternate understanding of design thinking as a creative, but also a reductive process, structured by four key filters. To generate design concepts, each organization should develop its own design-thinking formula, which incorporates these elements: user-centered design, emphasizing brand image, fostering collaborations, and adopting a competitor orientation. Design-oriented organizations implement design thinking by (1) employing multiple modes of design thinking, (2) disseminating end-user profiles across the organization, (3) cultivating organic organizational forms to increase collaborations, (4) using the brand to establish a design language, and (5) factoring in competitors' design outputs to implement design thinking (Chen and Venkatesh 2013, p. 15).

Acklin and Fust (2014) propose four modes of design management which can be distinguished with regard to their strategic contribution to the company and its direction:

- simple design management
- integrated design management
- dynamic design management and
- entrepreneurial mode of design management.

The fourth, entrepreneurial mode explores the overlap of entrepreneurship with design and design management. Design management has the capability to take on a more active role in companies in respect to entrepreneurial issues in companies as well in new venture creation. The entrepreneurial mode of design management also emphasizes two dimensions essential for any creative enterprise: the dimension of design as a creator of new opportunities, and the dimension of design management as a driver for the exploitation of these opportunities. These two dimensions can be applied with a view to new forms of creative entrepreneurship.

Concerning the different use of design potentials in companies, which is mostly related to managerial decisions, we propose another hypothesis:

It is clear that today's designer designs in a completely different world than the designer of the 20th century. Nevertheless, there is also a need for a new approach to management – a focus on a multi-disciplinary approach and design thinking. As Sir George Cox (the Cox Review of Creativity in Business by British Design Council) puts it: "We need business people who understand creativity, who know when and how to use the specialist, and who can manage innovation; creative specialists who understand the environment in which their talents will be used and who can talk the same language as their clients and their business colleagues; And engineers and technologists who understand the design process and can talk the language of business" (Quartz+Co. 2011, p. 24).

According to Verizer and Borja de Mozota (2005), developing formal tools for better integrating different disciplines and the unique perspectives seem to be particularly lacking for bringing the user-oriented design considerations to the forefront of senior management thinking.

For Buchanan (2015, p. 15), a manager or leader provides appropriate environment that facilitates the performance of others as they work to accomplish an undertaking. The environment is both conceptual and physical. Conceptually, it is the framework of values and vision that serves to accomplish a collective objective or goal. It also helps individuals to achieve the personal goals of participating individuals within and beyond the organization. Physically, the environment is the organization of resources needed to achieve goals and objectives. In general management theory, the functional aspects of management are planning, organizing, directing, and controlling. These are the areas of the functional application of design thinking in organizations, bound within the traditions of management. Managers are responsible for designing the worlds we make in organizations and for the worlds that organizations make for others in the social life around us.

There are different management styles and techniques, and the use of creative methods depends mostly on the education and knowledge of the management which is also connected with the design orientation of the company. We therefore propose:

H5: Design orientation of a company has a significant impact on the use of creative techniques by the management.

Can design shape organizational culture so that the organization positively affects the thoughts and behavior of individuals? The true test will be the degree to which our efforts to introduce design thinking into the management of organizations embodies the fundamental principle of design (Buchanan 2015, p. 21). The initial model of relationships with the hypotheses is shown in Figure 1.

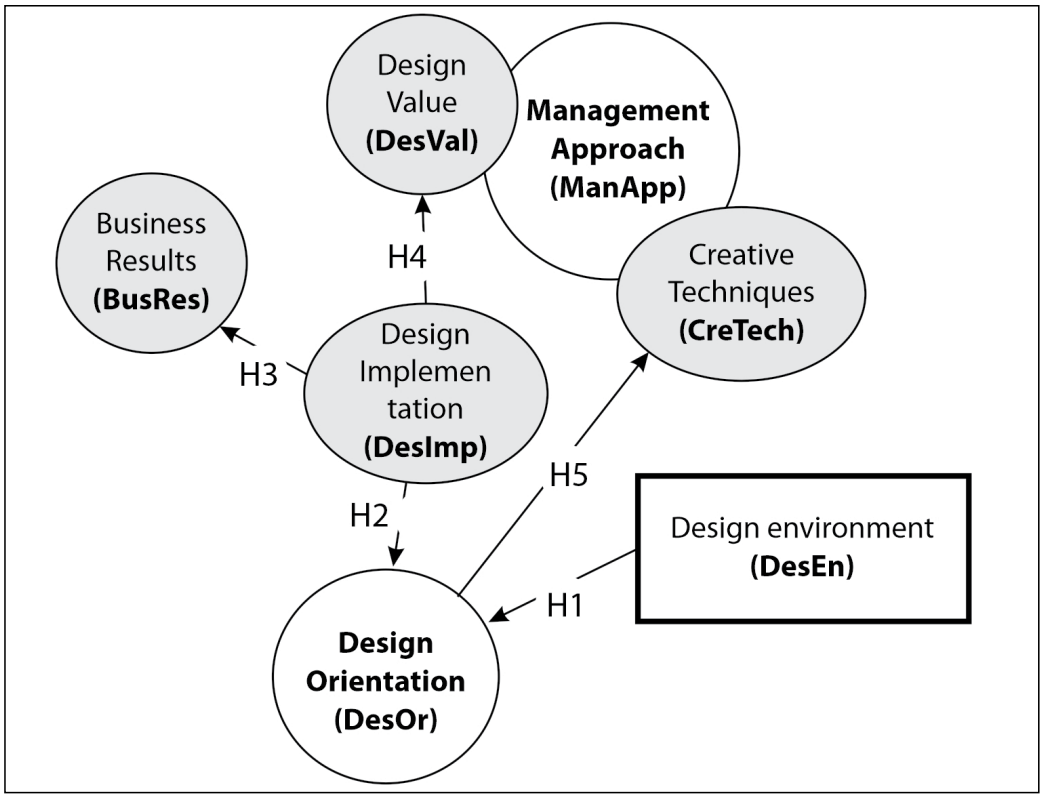
3. Research methodology and sample description

The research was conducted combining preliminary qualitative in-depth interviews and a quantitative online survey. After analyzing the literature, relevant items for the questionnaire were used from previous reliable research. The questionnaire consisted of 21 questions. Content validity of the questionnaire was tested with eight experts from the field of marketing, and one from the design field. Most of the responses were ranked on a Likert scale (1 to 5). The Design Orientation scale was adopted from Borja de Mozota (2003b) and included 13 items. For design implementation a three items scale was adopted from the Design Management Institute (DMI 2015). For measuring the managerial approach five items were used from the Centre for Design Innovation Ireland (2007), and additional six criteria for the use of creative methods were evaluated. For the measurement of company performance ten items were used. Respondents had to evaluate the overall performance of their business as well as additional nine performance criteria (performance rate against competition, growth and profitability dimensions, demand for products/services etc.). The final part of the questionnaire included additional questions with general data about the respondents and their companies.

The IBM SPSS v19 statistical program was used for data analysis, which were tested with univariate, bivariate and multivariate statistical methods, and structural equation modeling. An exploratory factor analysis was conducted to check the validity and reliability of the scales. Partial Least Square Structural Equation Modelling analysis (with the software Smart PLS 3) was conducted due to a relatively small sample, to examine the relationships between main constructs. PLS-SEM analysis offers a good approximation of common factor models in situations where factor-based SEM cannot deliver results due to its methodological limitations in terms of model complexity, sample size requirements, or inclusion of composite variables in the model (Sarstedt et al. 2017)

Data were collected using an online survey sent

Figure 1. The initial model



Source: Author's research results

to CEOs, general managers, and marketing managers in Croatian companies with at least 3 employees. A final list of 2,184 email addresses was compiled based on data provided from several reliable sources: the Croatian Chamber of Commerce (HGK), the Croatian Ministry of Entrepreneurship and Crafts (MINPRO), the Croatian Agency for SMEs, Innovation and Investments (HAMAG-BICRO), and the list of Croatian companies with GREEN MARK Sign of Excellence 2016. Managers received an email explaining the general purpose of the study and a link to the survey. The research began in June 2017 and was concluded in November 2017, after a reminder was sent. A significant number of respondents did not finish the questionnaire. A total of 143 managers returned usable questionnaires, yielding a 61 percent completion response rate. Out of these, the final sample of 112 respondents qualified for the research – CEOs or managers from companies with more than 3 employees, which is a return of 78%. There were 24% of companies with 3–10 employees, 34% with 11–50 employees, 15% with 51–100 employees, 6% with 101–200 employees, and 21% with more than 201 employees. The representation of companies according to their size (small, medium-sized, and large) corresponds to the structure ratio of the Croatian economy. The structure according to industry type was 40% of product industries, 33% of service industries, and 27 % of combined industries.

The final sample consisted of 58% male and 42% female respondents. Concerning the position in the company, 61% were managers and 39% were CEOs. In terms of age, 43% of respondents were aged 40–49 years, and 22.3% were aged 30–39, as well as between 50 and 59. Most of the respondents held a graduate degree, (47.3%), followed by a master's degree (15.2%), and a bachelor's degree (13.4%). Concerning the value of design, more than 80% of managers rated design as an important issue. In fact, 21% think that design plays an important role, 27% stated that design is extremely important, while 30% hold design to be a strategic tool. However, for 19 % it plays a limited role, and only 1% believe design is of no importance.

4. Results and discussion

Inferential statistical methods applied in this paper were: t-test, analysis of variance (ANOVA), and regression analysis. The PLS_SEM method was also applied as a confirmatory method of analyzing the direction of the influence of variables.

4.1. Testing hypothesis H1

To check the relation between the design environment and design orientation and to test hypothesis **H1** – Design environment is positively related to design orientation of a company – we applied the regression analysis. The factor of design orientation was considered a dependent variable in the analysis and the factor of orientation toward environment was an independent variable.

The R-value represents the multiple correlation coefficient and is 0.197. The R^2 value (0.039) indicates how much of the total variation is in the dependent variables –predictors (of DO) can be explained by the independent variable, the environment.

The next is the ANOVA table, which reports how well the regression equation fits the data (i.e., predicts the dependent variable). This table indicates that the independent variables predict the dependent variable statistically significantly. The statistical significance of the regression model, $p < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable (i.e., the regression model is a good fit of the data).

The coefficients table provides us with the following: Non-standardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are constant. If $p < 0.05$, the coefficients are statistically significantly different from 0 (zero). The t-value and corresponding p-value are located in the "t" and "Sig." columns. As we can see from the result in Table 1, the regression analysis shows the relationship of design environment support for business with design orientation. The correlation is not large (R=0.197) but is statistically significant ($p<0.05$).

The regression analysis shows the interconnection between the support from the environment to use design in business and the design orientation. The correlation is moderate (R=0.197) but statistically significant ($p<0.05$).

4.2. Testing hypotheses H2 and H3

We then test the relationship between design implementation and design orientation, as well as with business results.

Table 1. Regression Analysis

Descriptive Statistics									
			Mean		SD		N		
Design Orientation			3.852		0.685		112		
Please estimate support from your environment to use design in your business			2.71		1.134		112		
Model Summary									
Model	R	R-squared	Adjusted R-squared	Std. Error of the Estimate	Change Statistics				
					R-squared change	F-change	df1	df2	Sig. F-change
1	0.197	0.039	0.030	0.675	0.039	4.439	1	110	0.037
ANOVA[b]									
Model			Sum of Squares		df	Mean Square	F		Sig.
1	Regression		2.022		1	2.022	4.439		0.037
	Residual		50.106		110	0.456			
	Total		52.128		111				
Coefficients[a]									
Model			Unstandardized Coefficients		Standardized Coefficients		t		Sig.
			B	Std. Error	Beta				
1	(Constant)		3.529	0.166			21.256		0.000
	Please estimate support from your environment to use design in your business		0.119	0.056	0.197		2.107		0.037

Source: Author`s research results

H2: Design Orientation (DesOr) of a company is positively related to the level of Design Implementation (DesImp).
H3: The level of Design Implementation (DesImp) is positively related to Business Results (BusRes)

The results of **Question 6** about the level of design implementation with variables from Q6_1 to Q6_5 were tested for the relation with design orientation and business results (see Tables 2-6).

According to the results of the Levene's Test for Equality of Variances and t-test for Equality of Means, companies that use design within the company – for interior, and internal communication, are on average more design-oriented and are more successful.

However, there is no difference in design orientation or success between companies which use or do not use design externally – for corporate communication, branding & marketing activities.

Table 2. Question Q6_1. Levene's Test and t-test

Group Statistics										
	We use design internally for: workplace interior and internal communications			N	Mean	Std. Deviation	Std. Error Mean			
Design orientation	No			47	3.626	0.708	0.103			
	Yes			65	4.015	0.625	0.077			
Business Results	No			47	3.338	0.863	0.126			
	Yes			65	3.667	0.703	0.087			
		Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	Lower	Upper
Design orientation	Equal variances assumed	1.064	0.305	-3.075	110	0.003	-0.389	0.126	-0.640	-0.138
	Equal variances not assumed			-3.013	91.521	0.003	-0.389	0.129	-0.645	-0.133
Business Results	Equal variances assumed	2.978	0.087	-2.223	110	0.028	-0.330	0.148	-0.623	-0.036
	Equal variances not assumed			-2.152	86.478	0.034	-0.330	0.153	-0.634	-0.025

Source: Author`s research results

Table 3. Question Q6_2. Levene's Test and t-test

Group Statistics					
	We use design externally, for: corporate communication, branding & marketing activities.	N	Mean	Std. Deviation	Std. Error Mean
Design Orientation	No	21	3.627	0.754	0.165
	Yes	91	3.904	0.662	0.069
Business Results	No	21	3.387	0.893	0.195
	Yes	91	3.562	0.763	0.080

Table 3. ***Continued***

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Design Orientation	Equal variances assumed	0.496	0.483	-1.682	110	0.095	-0.277	0.165	-0.603	0.049
	Equal variances not assumed			-1.550	27.564	0.132	-0.277	0.179	-0.643	0.089
Business Results	Equal variances assumed	0.405	0.526	-0.917	110	0.361	-0.175	0.191	-0.553	0.203
	Equal variances not assumed			-0.830	27.126	0.414	-0.175	0.211	-0.607	0.257

Source: Author`s research results

Table 4. Question Q6_3. Levene's Test and t-test

	We use design for product innovation & development.	N	Mean	Std. Deviation	Std. Error Mean
Design Orientation	No	39	3.5448	0.64393	0.10311
	Yes	73	4.0156	0.65339	0.07647
Business Results	No	39	3.3494	0.84155	0.13476
	Yes	73	3.6250	0.74565	0.08727

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Design Orientation	Equal variances assumed	0.479	0.490	-3.651	110	0.000	-0.47075	0.12895	-0.72630	-0.21521
	Equal variances not assumed			-3.667	78.730	0.000	-0.47075	0.12838	-0.72629	-0.21522
Business Results	Equal variances assumed	1.082	0.301	-1.781	110	0.078	-0.27564	0.15473	-0.58228	0.03100
	Equal variances not assumed			-1.717	70.056	0.090	-0.27564	0.16055	-0.59584	0.04456

Source: Author`s research results

Table 5. Question Q6_4. Levene's Test and t-test

Group Statistics										
	We use design for process/service innovation, research & development		N	Mean	Std. Deviation	Std. Error Mean				
Design Orientation	No		41	3.4611	0.64954	0.10144				
	Yes		71	4.0772	0.60224	0.07147				
Business Results	No		41	3.3018	0.81585	0.12741				
	Yes		71	3.6602	0.74558	0.08848				
Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
							95% Confidence Interval of the Difference			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Design Orientation	Equal variances assumed	0.014	0.908	-5.067	110	0.000	-0.61604	0.12158	-0.85699	-0.37509
	Equal variances not assumed			-4.964	78.515	0.000	-0.61604	0.12409	-0.86306	-0.36902
Business Results	Equal variances assumed	1.448	0.231	-2.367	110	0.020	-0.35838	0.15140	-0.65843	-0.05834
	Equal variances not assumed			-2.310	77.575	0.024	-0.35838	0.15512	-0.66724	-0.04953

Source: Author`s research results

Companies that use design to develop and innovate products and services are, on average, more design-oriented than companies that do not use design to develop products, but there is no difference in the success of the company according to the use of design.

Companies that use design to develop and innovate processes and services are, on average, more design-oriented and also more successful than companies that do not.

Companies that use design for strategic planning are also more design-oriented and successful than companies that do not use design in strategic planning.

The previous analysis is followed by the additional testing of the results for **Question Q_10**, (see Table 7) to test the relationship between design implementation and overall business results of the company, according to the DMI ScoreCard model. Three t-test analyzes were performed for independent samples. One was conducted for each DM score card statement to check whether there is a statistically significant difference in the average values of the independent variables between two groups of data – subjects. As an independent variable, the variable of total company success on a scale from 1 to 5 was used, where companies with a score of less than 3 were in the group of less successful companies, and companies with a score of 3–5 were put in the group of successful companies. The following Table 7 shows average design usage ratings for two groups of companies with respect to business results score.

Table 6. Question Q6_5. Levene's Test and t-test

Group Statistics					
	We use design for strategic planning	N	Mean	Std. Deviation	Std. Error Mean
Design orientation	No	83	3.7070	0.66712	0.07323
	Yes	29	4.2655	0.56475	0.10487
Business Success	No	83	3.4187	0.82603	0.09067
	Yes	29	3.8448	0.56759	0.10540

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
							95% Confidence Interval of the Difference			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Design Orientation	Equal variances assumed	0.247	0.620	-4.029	110	0.000	-0.55851	0.13862	-0.83322	-0.28381
	Equal variances not assumed			-4.367	57.306	0.000	-0.55851	0.12791	-0.81461	-0.30241
Business Success	Equal variances assumed	4.235	0.042	-2.571	110	0.011	-0.42615	0.16578	-0.75469	-0.09761
	Equal variances not assumed			-3.065	71.420	0.003	-0.42615	0.13903	-0.70335	-0.14896

Source: Author`s research results

Table 7. Question Q_10. Levene's Test and t-test

Group Statistics					
	Business results	N	Mean	Std. Deviation	Std. Error Mean
We use design for development and delivery of products, services, and communications (for aesthetic value and functionality)	≥ 3.00	89	4.10	1.023	0.108
	< 3.00	23	3.65	1.152	0.240
We use design as a connector or integrator of business functions (for internal and external comm., as customer value, brand loyalty and market share)	≥ 3.00	89	3.71	1.140	0.121
	< 3.00	23	3.13	1.014	0.211
We use design as strategic resource for new business models (for strategic investments in customer experience design, long-term return on investment)	≥ 3.00	89	3.52	1.207	0.128
	< 3.00	23	2.83	1.114	0.232

Table 7. ***Continued***

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
						95% Confidence Interval of the Difference				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
We use design for development and delivery of products, services, and communications	Equal variances assumed	1.541	0.217	1.828	110	0.070	0.449	0.246	-0.038	0.936
	Equal variances not assumed			1.703	31.545	0.098	0.449	0.264	-0.088	0.986
We use design as a connector or integrator of business functions	Equal variances assumed	0.524	0.471	2.212	110	**0.029**	0.577	0.261	0.060	1.095
	Equal variances not assumed			2.371	37.728	0.023	0.577	0.243	0.084	1.070
We use design as strategic resource for new business models	Equal variances assumed	1.288	0.259	2.484	110	**0.015**	0.691	0.278	0.140	1.242
	Equal variances not assumed			2.605	36.534	0.013	0.691	0.265	0.153	1.228

Source: Author`s research results

As shown in Table 7, there are statistically significant differences between less and more successful companies in the two uses of design – integration of business function and strategic tool for business models. In the first statement (product development and delivery), there is no statistically significant difference between more successful and less successful companies (the score is higher here as well, but not so much that it could be accepted with certainty). This means that the hypothesis **H2** about the positive relations between design orientation and design implementation has been confirmed, while **H3** – about the positive relationship between level of design implementation and business results – has been partially confirmed.

4.3. Testing the hypothesis H4

We will test the positive relationship between the level of design implementation (DesImp) and the perceived design value (DesVal) by managers.

The relationship between design implementation and perceived design value is positive (R = 0.471) and statistically significant (see Table 8).

4.4. Testing the hypothesis H5

Finally, we will test the hypothesis **H5** that concerns the positive relationship between design orientation (DesOr) of a company and use of creative techniques (CreTech) by management.

Table 8. The t-test and Anova

Model	R	R-squared	Adjusted R-squared	Std. Error of the Estimate	Change Statistics				
					R-squared change	F-change	df1	df2	Sig. F-change
1	0.471	0.222	0.214	0.581	0.222	27.910	1	98	0.000

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.412	1	9.412	27.910	0.000
	Residual	33.050	98	0.337		
	Total	42.462	99			

Source: Author`s research results

Table 9. The t-test and Anova

Model Summary

Model	R	R-squared	Adjusted R-squared	Std. Error of the Estimate	Change Statistics				
					R-squared Change	F-change	df1	df2	Sig. F Change
1	0.497	0.247	0.241	0.84572	0.247	36.170	1	110	0.000

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.870	1	25.870	36.170	0.000[a]
	Residual	78.677	110	0.715		
	Total	104.547	111			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.779	0.322		5.516	0.000
	Use of creative techniques	0.577	0.096	0.497	6.014	0.000

Source: Author`s research results

The correlation R is 0.497 and the percentage of the common variance (R-squared) is 24.7%. ANOVA results (Table 9) show that the regression model is statistically significant (Sig<0.05). The analysis shows the connection between the use of creative techniques by management and design orientation of a company. Hypothesis H4 has been confirmed.

4.5. The PLS-SEM analysis

In the final stage of the analysis, we used the PLS SEM method to test the relationship between the constructs. Structural Equation Modeling (SEM) consists of two sub-models: the measurement model and structural model. The measurement model represents the relationships between the observed data and the latent variables. The structural model represents the relationships between the latent variables. The partial least squares path modeling method (PLS) to structural equation modeling (SEM) allows estimating complex cause-effect relationship models with latent variables. One of the most important advantages in using SEMs is that they provide two kinds of weights: one measuring the impact of each indicator on the corresponding composite indicator, the other measuring relationships among the composite indicators in the system (Trichera et al. 2008, p. 311).

The validity of the PLS-SEM model has been confirmed because the goodness of fit SRMR is 0.065 (less than 0.08, which is usually considered as a limit for good fitting model). Figure 11 shows values of direct and indirect impact of constructs. According to the PLS-SEM model, the design environment has a stronger impact on design orientation (0.187), followed by design implementation (0.125). The design environment also has a stronger impact on the perceived design value (0.306) than the managerial approach, although it is also significant (0.205).

Figure 2. The PLS-SEM Model

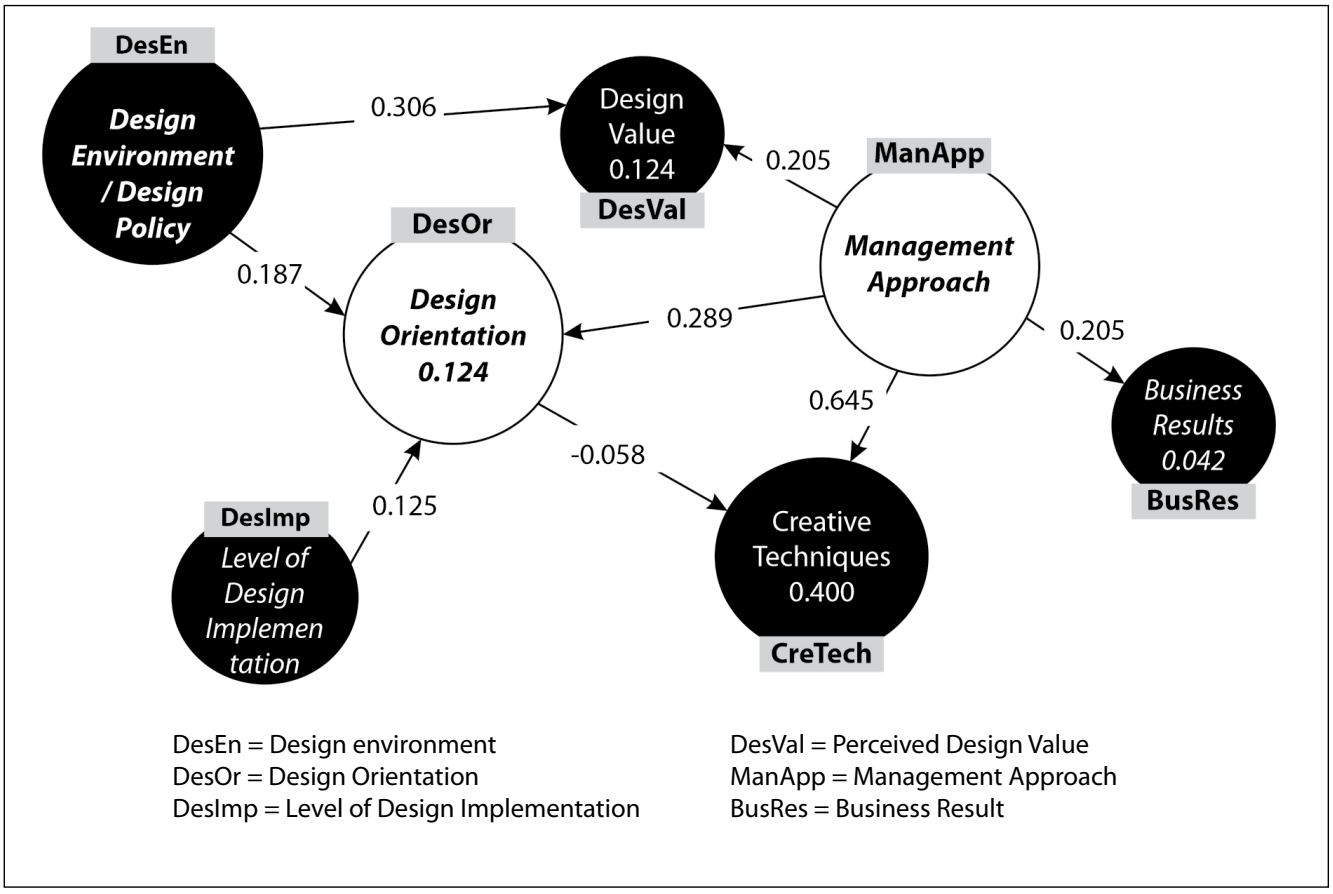


Figure 2.1. R-squared values of the PLS-SEM

	R Square
Business Results (BueRes)	0.042
Design Orientation (DesOr)	0.124
Perceived Design Value (DesVal)	0.124
Use of Creative Techniques (CreTech)	0.400

The managerial approach has a strong and positive impact on the use of creative techniques (0.645) and a significant but rather modest impact on business results (0.205). Design orientation of a company is not positively related to the use of creative techniques.

The PLS-SEM model (fig. 2.1.) explains 12.4% of the perceived design value and 40% of use of creative techniques in management.

According to the results of our research, a positive relation exists between design orientation and design implementation and the use of creative techniques in companies. The huge influence of the design environment – economic, social, cultural, legal and political – including the national design policy, has been confirmed. Design environment has a strong impact on design orientation of companies, as well as on perceived design value, but also a significant impact on managerial approach to design. Previous research, including the European Commission Innobarometer 2015, also indicates a positive relationship between design implementation and growing a business, as well as the influence of national design policies, which also fits with our results.

5. Conclusion, contribution and limitations

It is a challenge to propose a new model of managing design within different design environments, with the purpose of better cooperation between all the participants involved. The most important element of a national design environment is the support to use design resources – economic, social, cultural, legal, and political. The results of our research show that more than 50% of managers see the Croatian national design environment as negative and unsupportive (values 2 or 1 on the 5-point scale).

5.1. Contribution to Theory and Practice

Firstly, our research was undertaken in Croatia, a former socialist country from the Eastern bloc. The country acceded to the European Union in 2013 and is still experiencing a transitional economy. The majority of former studies about the subject of design orientation and design management have focused on the practice of companies in more developed European countries.

Secondly, the research highlights the role of design as one of the core elements of innovation. The study extends the existing knowledge, measuring the role of design orientation as well as the importance of design implementation in different levels of a company. Our results also confirm that design resources are important predecessors of business performance.

Our findings also confirm that the management has to be informed and educated about design and its benefits to fully engage design resources. These finding are especially important for Croatian SMEs which make up the majority of its economy. There is a strong tendency in Croatian companies to maximize short-run profitability, while at the same time neglecting long-term goals. Therefore, in an effort to develop factors that can lead to competitive advantage, managers and CEOs should focus not only on individual design resources, but also on their integration into different levels of the company. Design education and knowledge, as well as the ability to use creative methods, play an important role in understanding the impact and possible contribution of design in a company.

Some limitations of the research have to be taken into consideration before generalizing the results. The first limitation refers to the size of the sample – the drop-out rate was high, because it was hard to motivate managers and CEOs – our target group – to complete a rather long questionnaire. Another limitation was the reliability of the responses because managers might have been subjective in evaluating their own work and their business results. Therefore, the responses may be overrated. Future research should also contain more objective data of external variables.

The effects of different variables of design orientation on company performance are complex. They depend on the industry, size of the company, and many influences from the surroundings, which should further be continuously researched and measured.

The research results could be of interest to companies in the region of the Balkans and East European countries in order to increase their competitiveness. Also, further research should be expanded to other countries in the region.

Endnotes

1 https://ec.europa.eu/docsroom/documents/42981

2 https://rio.jrc.ec.europa.eu/en/country-analysis/Croatia

3 https://www.weforum.org/reports/the-global-competitiveness-report-2020

4 https://www.ico-d.org/about/index#defining-the-profession

5 http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer_en

6 https://www.dmi.org/page/What_is_Design_Manag

7 http://www.dmi.org/?DesignValue

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APPENDIX

Quantitative Research – Questionnaire for online SURVEY *(originally in Croatian)*

** **Important notice:** this questionnaire is **addresed to the manager** involved in the process of decisions **about design** in your company; If you are not the right person, please forward this message to your colleague.*

***Introduction**: The Questionnaire consists of **6 parts**: ABOUT MARKET ORIENTATION / DESIGN ORIENTATION / MANAGERIAL APPROACH / INTERFUNCTIONAL COORDINATION / YOUR BUSINESS PERFORMANCE/ YOUR DESIGN ENVIRONMENT - most of them with value scales (**1-5**). **In the end**: GENERAL DATA (5 more Qs).*

*The questionnaire is **anonymous**, personal data are not to be used or published. The process lasts about **10** minutes. Please do not withdraw from completing the survey, because it would be a waste of time. We will be happy to inform you about the **results** of the research conceerning the relations between market and design orientation, if you leave us your e-mail address at the end.*

Before we start, please fill the information about your company size:

***Number of employees:** **A.** 3 - 10 / **B.** 11 – 50 / **C.** 51 – 100 / **D.** 101 – 200 / **E.** < 201*

I. First set of Questions: about Market and Customer orientation of your company.

***1. Please evaluate the marketing activities that your company uses:** (scale: **1 never** - **5 regularly**)*

Item - statement	1 never	2	3	4	5 regularly
1.1. Long-term marketing plans	1	2	3	4	5
1.2. Short-term marketing plans	1	2	3	4	5
1.3. Marketing communication activities planning (ad and promotion)	1	2	3	4	5
1.4. Media Buying	1	2	3	4	5
1.5. Marketing research	1	2	3	4	5

2. Please evaluate the various market activities of your company (MO) (scale: 1 never -- 5 regularly)

Item - statement	1 never	2	3	4	5 regularly
2.1. Our commitment to serving customers is closely monitored.	1	2	3	4	5
2.2. Sales people share information about our competitors	1	2	3	4	5
2.3. We achieve rapid response to competitive actions	1	2	3	4	5
2.4. Our functions are integrated to serve market needs	1	2	3	4	5
2.5. Close attention is given to after-sales services.	1	2	3	4	5

3. Please evaluate the way you determine customer needs in your company. (Scale: 1 never - 5 regularly)

Item - statement	1 never	2	3	4	5 regularly
3.1. We sistematically measure customer satisfaction	1	2	3	4	5
3.2. Our competitive strategy is based on understanding customer needs	1	2	3	4	5
3.3. We observe how customers use our products	1	2	3	4	5
3.4. We collaborate closely with key users to predict future customer needs before others	1	2	3	4	5
3.5. We collect information necessary for detecting the appearance of new market segments (i.e. groups of customers with new requirements).	1	2	3	4	5
3.6. We have full, updated, information on the image of our products/brands by our current and potential customers.	1	2	3	4	5
3.7. We measure levels of customer loyalty compared to last year and our competition.	1	2	3	4	5
3.8. We explore key trends to gain insight into what users will need in future.	1	2	3	4	5
3.9. Our objectives and strategies are driven by increasing value for customers.	1	2	3	4	5

II. ***Second set of Questions*** *about* ***Design orientation***.

4. Please evaluate the role that design plays in your company.

No design ***Design as the integral part of strategy***.

1 *2* *3* *4* ***5***

5. Please evaluate the use of design for your company in the following areas.

Item - statement	1 never	2	3	4	5 regularly
5.1. We use design internally for: workplace interior and internal communications.	1	2	3	4	5
5.2. We use design externally, for: corporate communication, branding & marketing activities.	1	2	3	4	5
5.3. We use design for product innovation & development.	1	2	3	4	5
5.4. We use design for process/service innovation, research & development.	1	2	3	4	5
5.5. We use design in strategic planning.	1	2	3	4	5

6. Compared with this year, do you expect your company's investment in design in next 3 years to:

Item - statement	1 never	2	3	4	5 regularly
6.1. Decreased a lot (11% or more)	1	2	3	4	5
6.2. Stay the same	1	2	3	4	5
6.3. Increased a little (1- 10 %)	1	2	3	4	5
6.4. Increased a lot (11% or more)	1	2	3	4	5
6.5. I don't know	1	2	3	4	5

6.B. Where does innovation rank among your company's strategic priorities for next year?

Item - statement	1 never	2	3	4	5 regularly
6B.1. Top priority	1	2	3	4	5
6B.2. One of Top 3 priorities	1	2	3	4	5
6B.3. One of Top 10 priorities	1	2	3	4	5
6B.4. Not on list of priorities	1	2	3	4	5
6B.5. We can not afford innovations	1	2	3	4	5

7. Please evaluate these variables of design caracteristics for design management according to their influence on business performance *(values from* ***5 = fundamental*** *to* ***1 = not of concern****):*

Item - statement	1 not of concern	2	3	4	5 funda-mental
7.1. Design creates competitive advantage.	1	2	3	4	5
7.2. Design contributes significantly to benefits perceived by consumers.	1	2	3	4	5
7.3. Design changes the spirit of the firm, which becomes more innovative.	1	2	3	4	5
7.4. Design allows a company to sell at a higher price.	1	2	3	4	5
7.5. Design improves coordination between marketing and R&D functions.	1	2	3	4	5
7.6. Design is a know-how that transforms the processes.	1	2	3	4	5
7.7. Design gives access to a wide variety of markets.	1	2	3	4	5
7.8. Design improves coordination between production and marketing.	1	2	3	4	5
7.9. Design develops project management of innovation.	1	2	3	4	5
7.10. Design creates new niche markets.	1	2	3	4	5
7.11. Design improves the circulation of information.	1	2	3	4	5
7.12. Design improves our internal and external communication.	1	2	3	4	5
7.13. Design improves our services and working processes.	1	2	3	4	5
7.14. Design involves our customers in a co-creation process.	1	2	3	4	5
7.15. Design provides sustainable development and benefits to the community.	1	2	3	4	5
7.16. Design improves our long-term goals / return-on-investment.	1	2	3	4	5

8. Please evaluate the use of design in your company according to Design Value Scorecard (DMI). scales: *1 never / 2 rarely / 3 occasionaly / 4 frequently / 5 all the time*

Item - statement	1 never	2	3	4	5 all the time
8.1. We use design for development and delivery of products, services and communications (for aesthetic value and functionality)	1	2	3	4	5
8.2. We use design as a connector or integrator of business functions (for internal and external conversion, as lifetime customer value, brand loyalty and market share)	1	2	3	4	5
8.3. We use design as strategic resource for new business models (for strategic investments in customer experience design, long-term return on investment)	1	2	3	4	5

III. ***Third set of Questions:*** *about managerial approach (MA) and use of - creative methods*

9. Please evaluate managerial approach *in your company (MA)*

Item - statement	1 never	2	3	4	5 regularly
9.1. Our top management discusses and compares with competitors' strengths and weaknesses.	1	2	3	4	5
9.2. Our top management visits important customers regularely.	1	2	3	4	5
9.3. Our managers understand how employees contribute to value for customers.	1	2	3	4	5
9.4. Our top management understands the importance of design and innovation.	1	2	3	4	5
9.5. Our managers frequently involve employees in important decisions.	1	2	3	4	5

9.B. Please evaluate the use of creative methods in your managerial decision making process / <u>Scale:</u> *1* ***never*** *---------- 5* ***regularly***

Item - statement	1 never	2	3	4	5 regularly
9.B.1. Brainstorming - for generating ideas / new solutions.	1	2	3	4	5
9.B.2. Mind mapping (visual pictures of ideas or concepts).	1	2	3	4	5
9.B.3. Storytelling /possible scenarios.	1	2	3	4	5
9.B.4. Prototyping the ideas/experiences/solutions (diagrams, models, role-playing etc.)	1	2	3	4	5
9.B.5. Scamper method (adapt, substitute, put to other use)	1	2	3	4	5
9.B.6. Six thinking hats method (parallel thinking process)	1	2	3	4	5
9.B.7. None	1	2	3	4	5
9.B.8. Other (please specify):					

10. Did you gain education or experience about creative methods /use of design skills?

A. *No creative skills* ***B.*** *Secondary school* ***C.*** *High education*
D. *Specialization* ***E.*** *Practice*

IV. ***Fourth set of Questions:*** *About interfunctional coordination*

11. Please evaluate cooperation between different business units in your company - interfunctional coordination: *(IC) (****Scale:*** *1 never ---------- 5 regularly)*

Item - statement	1 never	2	3	4	5 regularly
11.1. Market information is freely shared inside our company.	1	2	3	4	5
11.2. Persons in charge of different activities in our company are involved in preparing business plans & strategy.	1	2	3	4	5
11.3. We regularly have inter-organizational meetings to discuss market trends and future development.	1	2	3	4	5
11.4. Marketing strategies are always drawn up in agreement with other business functions.	1	2	3	4	5
11.5. The departments share ideas, information and/or resources.	1	2	3	4	5

V. ***Fifth set of Questions:*** *– About Business performance - success*

12. ***Please rate your firm's performance over the last three years against competing firms.***

The company belongs to the lowest scoring firms — *The company belongs the highest scoring firms*

1 *2* *3* *4* *5*

13. Please rate your firm's GROWTH DIMENSIONS (scale from 1 to 5):

Item - statement	1 lowest	2	3	4	5 highest
GR1. Sales growth position relative to competition	1	2	3	4	5
GR2. Satisfaction with sales growth rate	1	2	3	4	5
GR3. Market share gains relative to competition	1	2	3	4	5

14. Please rate your firm's PROFITABILITY DIMENSION *(scale from 1 to 5)*

Item - statement	1 lowest	2	3	4	5 highest
PR1. Satisfaction with return on corporate investment.	1	2	3	4	5
PR2. Net profit position relative to competition.	1	2	3	4	5
PR3. ROI position relative to competition.	1	2	3	4	5
PR4. Satisfaction with return on sales.	1	2	3	4	5
PR5. Financial liquidity position relative to competition.	1	2	3	4	5

15. Looking back over the past 12 months, how would you describe the demand for your company's products/ services compared to the previous year, has there been: *(levels 1-5)*

Significant reduction ***Significant growth***
1 *2* *3* *4* *5*

VI. Sixth set of Questions: ***About Design Environment***

16. Could you please estimate support from your environment to use design in your business:

Not at all ***Huge support***
1 *2* *3* *4* *5*

If you answer was ***3 or more,*** *please be specific about* ***the kind of support.***

16.a. What kind of support did you gain:

Item – statement	1 never	2	3	4	5 regularely
16.A.1. Government Design Policy/Strategy (financial support, benefits, funds)	1	2	3	4	5
16.A.2. Local community (finacial, benefits, funds)	1	2	3	4	5
16.A.3. European Union Policy/Strategy (legacy system, funds)	1	2	3	4	5
16.A.4. Other (please specify)					

17. Please estimate the state of design in Croatia: *(scale from 1 to 5)*

Item / statement- quality	1 lowest	2	3	4	5 highest
17.1. Design industry (number of designers/design agencies, promotion of design)	1	2	3	4	5
17.2. Design policy / Legal system (laws, authors rights, intellectual property)	1	2	3	4	5
17.3. Design education in business study programs (design knowledge and creative methods)	1	2	3	4	5
17.4. National design environment(national design strategy - government design policy)	1	2	3	4	5

VI. DATA /GENERAL QUESTIONS (about the company):

Your company´s industry:
A. Product / B. Service / C. Combined - product and service

1.a. How long is the company active in the market?: ___ years

1.b. Years of your company design experience:
A. *no design experience /* ***B.*** *= 1 - 5 /* ***C.*** *6 – 10 /* ***D.*** *11 – 19 /* ***E.*** *more then 20*

1.c. *Design awards: YES / NO*

2. How has your turnover changed compared with the previous year?
a) Decreased a lot (11% or more)
b) Decreased a little (1- 10 %)
c) Stay the same
d) Increased a little (1- 10 %)
e) Increased a lot (11% or more)

3. ***What proportion of your turnover is export?***
a) No export: 0%
b) From 1 – 5%
c) From 6 – 25%
d) From 26 – 50%
e) From 51 – 75%
f) From 76 – 100%

INFORMATION ABOUT YOU AS THE RESPONDENT:*

1. Your position inside the company: *(multiple answers are possible)*
a) Owner - CEO
b) Executive Manager
c) Marketing Manager
d) Design Manager
e) Product Manager
f) other:_____ (please specify)

2. Your gendre: X Male / X Female 2.a. Age: 25-29 / 30-39 / 40-49 / 50-59 / < 60

2.b. Your education: *A) Undergraduate / B) Graduate / C) M.Sc. / D) MBA / E) Ph.D. / F) Other: ____*

Thank you for your precious time and cooperation!
The research results will be used for the scientific purpose only.