A Study of the Effects of the Type of Design Award on Design Capability and Business Performance

Tung-Jung Sung[*], Manlai You[**], Yi-Ta Lu[*], and Shu-Shiuan Ho[*]

[*]*Graduate Institute of Design, National Taiwan University of Science and Technology, Taipei, Taiwan, sungtj@mail.ntust.edu.tw*
[**]*Graduate School of Industrial Design, National Yunlin University of Science and Technology, Yunlin, Taiwan, youm@yuntech.edu.tw*

Abstract: Design award represents an invaluable asset which enables a firm to secure and sustain its competitive advantages. Yet design award remains locked in a 'technical' straitjacket, and the business implication of winning a design award is largely unexplored. In order to uncover this emergent field, the main purpose of this study is to empirically examine the effects of the type of design award on design capability and business performance. Based on the data collected from 64 of Taiwan's world-class design-award-winning projects (i.e., G-mark, iF and reddot) during the years 2005 to 2007, four key dimensions of design capability (*product-reliability, technology-application, material-aesthetics, and function-usability*) and two key dimensions of business performance (direct economic benefit and indirect economic benefit) are identified. The results show that as for the prerequisite of winning a world-class design award, **reddot** receives significantly higher scores on the product-reliability of design capability than **iF**. However, the findings reveal that there is no significant relationship between the type of design award and business performance. Interestingly, statistical results indicate that *product-reliability* of design capability has positive effects on direct economic benefit and indirect economic benefit of business performance, while *material-aesthetics* of design capability has a positive effect on indirect economic benefit of business performance. It is hoped that the outcome of this study could be a useful reference for a firm to set its design-investment strategies or develop its design capabilities.

Keywords*: *Design Award, Design Capability, Business Performance

1. Introduction

In recent years, Taiwan's design capability has been recognized through the fact of obtaining many renowned international design awards. For example, Taiwanese firms received 38 iF design awards, 35 reddot design awards, and 37 G-Mark design awards in 2007. Undoubtedly, Taiwan's design competitiveness has been attributed in part to its great achievements in many world-class design competitions. However, what design capability can really contribute a firm to win a design award? And, could the design award have any effects on a

firm's business performance? The answers for these two fundamental questions are still unknown. Recently, Samsung has become one of the most valuable brands around the world after making a lot of efforts on the investment of design for several years and receiving many design awards [14]. This case shows that design awards represent a vital factor which enables a firm to promote its company reputation and obtain competitive advantages promptly. Some researchers further posited that design awards are not only considered as an effective measurement tool of creativity management, but also have an impact on a firm's business performance [2, 6]. In addition to enhancing the company reputation and free publicity, receiving design awards stands for social recognition [13]. Therefore, design awards do play a significant role in a firm's design competitiveness. Yet, design awards remain locked in a technical straitjacket, and the business implication of winning a design award is largely unexplored. Therefore, the main objective of this study is to expand our understanding on the potential contributions of design awards in a firm by examining the effects of the type of design award on design capability and business performance. It is important to note that design awards in this study refer to product design awards rather than other design awards.

2. Literature Review

2.1 Design Award

Merriam-Webster English dictionary defines an award as: "a judgment or final decision; especially for the decision of arbitrators in a case submitted to them" [4]. Any selection events or competitions which contain the three mentioned elements will be deemed as award activities. Moreover, an award might create the 'legitimacy' for certain products or producers, and set up the rules of the competitive game [6]. Therefore, a good award competition not only can confirm the professional performance of an individual, a group, or an enterprise, but also differentiate the best from the others and become a selection system dominating the industry. Due to the fact that IDEA mainly evaluates "industrial design," this study will mainly focus on other three class-world design awards, such as G-Mark, iF, and red dot, which mostly evaluate "product design." First, G-Mark award, which is also known as Good Design Award, was established to provide education and guidance to industry and design by Japan's Ministry of International Trade and Industry in 1957. Until now, there have been a total of 35,000 such awards given to participants from various countries world-wide through this design evaluation system. G-Mark with fifty-year old has been placing tremendous efforts on reinforcing the impact of design on the society and on cultural values in these years. Second, iF award, which has been established over fifty years, is sponsored by International Forum Design of Germany annually and is also one of the most influential design awards recognized globally. The objectives of iF are to boost industrial product design and to advocate the concepts of design innovation. Nowadays, iF has opened an Asian branch office in Taipei. Third, reddot award was established by German's Design Zentrum Nordrhein Westfalen, the European's most well-known design association. It also has a history of more than fifty years and is the greatest honor among international design competitions. As stated earlier, Taiwan's firms have recently received great achievements in many world-class design competitions, such as G-Mark, iF, and reddot. Table 1 shows some of Taiwan's world-class design-award-winning projects from 2005 to 2007.

Table 1 Some of Taiwan's world-class design-award-winning projects from 2005 to 2007

Year	Item	G-mark [a]	iF [b]	reddot [c]
2005	**Products**	38	30	20
	Firms	21	16	9
	Examples					
		VAM Dry Box, Concise Living Co., Ltd.	USB Flash Drive, Duckimage Co., Ltd.	Carbon Fiber Notebook PC W1, (Golden Award), AsusTek Computer Inc.	Yoropen Ballpoint, Yoro Pen Corp.	Bikamper (best of the best winner), Topeak Co., Ltd.
2006	**Products**	38	65	33
	Firms	20	37	16
	Examples						
		Putt Balance Board Weplay, Kiddie's Paradise Inc.	Ferrari 1000, Acer Inc.	LUXO Fahrradlicht (Golden Award), Chance Good Ent. Co., Ltd.	Scanner 7350CT (Golden Award), BenQ Corp.	Wind-Power Bicycle Lamp (best of the best winner), Chance Good Ent. Co., Ltd.	LCD Monitor CMV 946D, Chi Mei Co., Ltd.
2007	**Products**	37	38	35
	Firms	13	27	22
	Examples						
		PDA Phone P526, AsusTek Computer Inc.	USB HDD Mini Cube, A-DATA Technology Co., Ltd.	Portable Mobile TV PMV1000 (Golden Award), BenQ Corp.	Polo Jump, Yeduo Design, Co., Ltd.	Tai-Chi Ball, Kiddie's Paradise Inc.	Hand-held laser scanner, Zebex Industries Inc.

Note: [a] : [7]; [b] :[20] ; [c] : [9].

2.2 Design capability

During the last decade, research on organizational strategic development has paid special attention to the available capabilities [12]. These elements have been considered as essential assets that enable a firm to attain competitive advantages and influence a firm's business performance. Capabilities can be defined as a firm's capacity to deploy resources for a desired end result [1]. In a competitive environment, the notion of capability-based competition, and asserted that distinctive capabilities can be treated as the source of a firm's competitive advantages [15]. And, capabilities can be often rooted in a firm's capacity, such as organizational culture, organizational routines, and managerial processes [17]. Based on the view of the capability-based competition, a firm is unable to create competitive advantages without the capabilities of exploiting the resources, even if the firm has valuable resources. As a result, having distinctive capabilities is not only crucial for a firm to attain competitive advantages, but also a potential for business success. In general, capabilities reflect an organization's

ability to achieve new and innovative forms of competitive advantages. While capability is the source of a firm's competitive advantages, design capability can be treated as the capacity of a firm's professional design [3]. Based on the notion that winning a design award as a new and innovative form of competitive advantages requires the exploitation of existing firm-specific design capabilities, we assume that design capability can be treated as one of the prerequisites of winning a world-class design award. In general, design capability is frequently embedded in the routine of a firm's design sector or unit which mainly seeks to provide the design services effectively [16]. And, robust design capability can be further classified into four different dimensions: 1) design function, 2) design aesthetics, 3) design technology, and 4) design quality [16]. Table 2 shows components of the dimensions of a firm's design capability.

Table 2 Measured items, components, and dimensions of a firm's design capability

Dimension	Components	Measured items	Literature
Design function	function	· versatility with respect to functionality	[16]
	adaptability	· adaptability to various environments	
Design aesthetics	attractive appearance	· presenting specific semantic information	[16]
	semantics delivery	· providing positive visual experience	
Design technology	core technology	· extension of core product technologies	[11, 16]
	technical integration	· integration of various product technologies	
	new material application	· innovation and application of new materials	
Design quality	consistency	· prevention of production problems	[5, 16]
	usability	· improvement in the usability of the product	
	durability	· improvement in the durability of the product	
	reliability	· conformity to various design specifications	

2.3 Business performance

Some indicators of business performance as the measurable evidence are often used to verify the achievement of a desired goal [10]. Furthermore, prior research suggests a three-dimensional conceptualization of business performance consisting of *effectiveness*, *efficiency*, and *adaptability* [19]. Effectiveness is defined as the success of business performance compared with that of their competitors in the marketplace. Efficiency is treated as an index (a set of outputs of business products and programs divided by a set of inputs of resources employed to implement them). Adaptability refers to business success in responding over time to change in a dynamic environment. To be explicit, effectiveness is most closely associated with nonfinancial goals (e.g., company reputation), efficiency is highly associated with achieving profitability (e.g., profit rate), and adaptability is associated with adaptation to changes (e.g., product quality). Particularly, some researchers have proposed two distinctive categories of business performance: 1) direct economic gains (e.g., selling-price, sales revenues and market share) and 2) indirect economic gains (e.g., company reputation and free publicity) [6]. Therefore, in this study, we utilized the above categorization, such as direct and indirect economic gains, to measure business performance (see Table 3).

Table 3 Measured items and dimensions of a firm's business performance

Dimension	Measured items
Direct economic gains	Comparing to the project without a design award, a world-class design-award-winning project generates better sales revenues.
	Comparing to the project without a design award, a world-class design-award-winning project has a higher selling-price.
	Comparing to the project without a design award, a world-class design-award-winning project has a better market share.
Indirect economic gains	Comparing to the project without a design award, a world-class design-award-winning project better promotes the reputation of the company (or the client).
	Comparing to the project without a design award, a design-award-winning project better obtains free publicity.
	Comparing to the project without a design award, a world-class design-award-winning project better demonstrates the innovative ability of the company (or the client).
	Comparing to the project without a design award, a world-class design-award-winning project better achieves the satisfaction of the customer (or the client).

3. Methods

3.1 Sample description and data collection

A total of 30 Taiwanese firms that have won 2 or more of the world-class design awards during the years 2005 to 2007 listed in the directories of iF year book product, Japan good design award yearbook, and reddot design yearbook were chosen as the sample frame [7, 9, 20]. The unit of analysis used in this study was a world-class design-award-winning project. And, the respondent was required to be an individual who was in charge of the world-class design-award-winning project with a significant understanding of the design activities conducted within the participating firm. A two-stage mailing method was used to collect data. The first mailing included: a cover letter addressed to each recipient explaining the purpose and importance of the study, a self-administered questionnaire, and a reply-paid envelope. The other follow-up mailings were conducted one or two weeks after the first mailing. In response to the multiple personal calls made and facsimiles sent, 64 of Taiwan's world-class design-award-winning projects, as shown in Table 4, from 26 Taiwanese firms were finally solicited for participation in this study. It is important to note that the respondents expressed very comfortable answering questions about design awards related issues since they desired to uncover them.

Table 4 The distribution of the responding world-class design-award-winning projects in different firms

No. of the firm		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
Design award	iF	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	x	x	x	-	24
	G-mark	x	x	x	-	x	x	x	x	x	x	x	x	-	x	x	-	x	x	-	-	-	x	x	x	x	x	20
	reddot	-	x	x	x	x	x	x	x	-	x	-	x	x	-	x	x	x	-	x	x	x	x	-	x	x	x	20
Total (n)		2	3	3	2	3	3	3	3	2	3	2	3	2	2	3	2	3	2	2	2	2	2	2	3	3	2	64

Note: "x": with a world-class design award; "–": without a world-class design award

3.2 Instrument

Formal pretests were conducted to determine the clarity of the scale items used in all research constructs. Three firms participated in the pretests: *Acer* Inc. (a computing system product maker), *BenQ* Corp. (a telecommunication product maker), and *Dockimage* Co. (a design consultancy firm). All the respondents were asked to complete a questionnaire personally administered by the authors. Minor revisions were made to reflect suggestions regarding rewording and clarifications as a result of the pretests. Design capability was measured using eleven distinct items (see Table 2), while business performance was measured using seven items (see Table 3) in this study. A seven-point Likert-type scale ranging from "strongly disagree" to "strongly agree" was used in these measures.

4. Data Analyses and Results

4.1 Means and standard deviations of design capability and business performance

Means and standard deviations of two measure dimensions of design capability and business performance can be found in Table 5. With regard to design capability, the participants expressed higher degree of the agreement that "attractive appearance" (Mean=6.30) and "semantics delivery" (Mean=6.23) are the prerequisites of winning a world-class design award. With regard to business performance, comparing to a project without a design award, the participants expressed higher degree of the agreement that a world-class design-award-winning project has better performance on "company reputation" (Mean= 6.08), "free publicity" (Mean=6.14), and "innovation ability" (Mean=6.08). Overall, a world-class design-award-winning project received higher scores on indirect economic gains of business performance than direct economic gains. According to the findings of this study, the participants did not agree that a world-class design-award-winning project has better "market share" (Mean=3.95 < 4 as the median value) of business performance.

Table 5 Means and standard deviations of design capability and business performance

Dimension		Measure	N	Mean [a]	S.D.[a]	Max.	Min.
Design capability		Function	64	5.72	1.091	7	3
		Adaptation	64	4.61	1.217	7	1
		Attractive appearance	64	**6.30**	0.659	7	4
		Semantics delivery	64	**6.23**	0.707	7	5
		Core technology	64	4.81	1.153	7	2
		Technical integration	64	4.59	1.109	7	2
		New material application	64	5.64	0.949	7	3
		Consistency	64	5.36	1.484	7	1
		Usability	64	5.28	1.076	7	3
		Durability	64	4.77	1.192	7	2
		Reliability	64	5.70	1.019	7	2
Business performance	Direct economic gains	Sales revenues	64	4.17	1.267	7	1
		Selling price	64	4.13	1.303	6	1
		Market share	64	3.95	1.133	7	1
		Average Mean		***4.08***			
	Indirect economic gains	Company reputation	64	**6.08**	0.783	7	4
		Free publicity	64	**6.14**	0.814	7	4
		Innovation ability	64	**6.02**	0.864	7	4
		Customer satisfaction	64	5.25	1.127	7	2
		Average Mean		***5.87***			

Note: [a]: A seven-point Likert-type scale (1 = strongly disagree, 7 = strongly agree) was used.

4.2 Reliability and validity analyses

Table 6 shows the results of factor analysis of the eleven design capability variables. Four extracted factors, such as *product-reliability*, *technology-application*, *material-aesthetics*, and *function-usability*, accounted for 69.478% of the total variance. The factorability of the correlation matrix was comfortably high, as measured by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.707). The result of Bartlett's test of sphericity was significant at $p<0.001$. Therefore, factor analysis for the variables of construct seems to be appropriate. The Cronbach's α values of four extracted factors exceeded the recommended 0.6 criterion [8]. As for business performance, Table 7 reports that the results of seven business performance variables. Two extracted factors, *direct economic benefit* and *indirect economic benefit*, accounted for 65.419% of the total variance. In the construct of business performance, all the values of Cronbach's α also exceeded 0.6. In general, high values of Cronbach's α indicate high internal consistency of multiple items measuring each construct and high reliability

of the individual construct. As the content validity, the measurement items of the questionnaire test in this study were first indentified based on previous related theories, such as strategic management and performance theories. Then, experienced individual selected from among the participants examined these items and confirmed that they were useful. As a consequence, the test's content validity is found to be satisfactory.

Table 6 Factor analysis for design capability

Variables	Factor Loadings				% Variance Explained	% Cumulative Variance	Cronbach's α
	product-reliability	*technology-application*	*material-aesthetics*	*function-usability*			
Reliability	0.876				21.090%	21.090%	0.772
Durability	0.778						
Consistency	0.709						
Technical integration		0.815			17.269%	38.359%	0.692
Core technology		0.778					
Adaptation		0.543					
Attractive appearance			0.850		15.681%	54.041%	0.624
Semantics delivery			0.786				
New material application			0.578				
Function				0.862	15.438%	69.478%	0.668
Usability				0.759			
Eigenvalues	2.320	1.900	1.725	1.698			

Table 7 Factor analysis for business performance

Variables	Factor Loadings		% Variance Explained	% Cumulative Variance	Cronbach's α
	direct economic benefit	*indirect economic benefit*			
Sales revenues	0.906		34.499%	34.499%	0.853
Selling price	0.830				
Market share	0.796				
Company reputation		0.778	30.920%	65.419 %	0.678
Free publicity		0.769			
Innovation ability		0.743			
Customer satisfaction		0.526			
Eigenvalues	2.415	2.164			

4.3 The effects of the type of design award on design capability

Table 8 shows that the variables of design capability varied across different design awards. The results reveal that **reddot** receives significantly higher scores on the *product-reliability* of design capability than **iF** (F=3.979, p<0.05). However, other design capability variables in terms of *technology-application*, *material- aesthetics*, and *function-usability* do not vary with the different design awards.

Table 8 Means and standard deviations of *design capability* in each type of design award

Design capability Variables	iF (*n*=24)		G-Mark (*n*=20)		reddot (*n*=20)		F-value	P-value	Scheffe's Test
	Mean [a]	S.D. [a]	Mean [a]	S.D. [a]	Mean [a]	S. D. [a]			
Product-reliability	-0.41	1.14	0.10	0.77	0.39	0.87	3.979	**0.024***	**iF< reddot**
Technology-application	0.07	0.98	0.01	1.12	-0.10	0.93	0.169	0.845	
Material-aesthetics	-0.14	0.95	0.13	1.16	0.03	0.91	0.390	0.679	
Function-usability	-0.11	1.02	-0.01	1.00	0.13	1.03	0.297	0.744	

Note: [a] factor scores of design capability (see Table 6); * $p < 0.05$

4.4 The effects of the type of design award on business performance

Furthermore, the results presented in Table 9 clearly show that two business performance variables, *direct economic benefit* and *indirect economic benefit*, are not associated with the type of the design award.

Table 9 Means and standard deviations of *business performance* in each type of design award

Design performance Variables	iF (*n*=24)		G-Mark (*n*=20)		reddot (*n*=20)		F-value	P-value
	Mean [a]	S.D. [a]	Mean [a]	S.D. [a]	Mean [a]	S.D. [a]		
Direct economic benefit	0.03	0.86	0.21	1.10	-0.25	1.05	1.07	0.35
Indirect economic benefit	0.12	1.08	-0.32	0.94	0.17	0.93	1.53	0.23

Note: [a] factor scores of design performance (see Table 7)

4.5 The effects of design capability on business performance

In this study, multiple regression analysis was performed to test whether design capability would have a significant direct effect on business performance. First, there is a significant relationship between the overall set consisting of design capability and the *direct economic benefit* of business performance ($F=3.845$, $p<0.01$), as shown in Table 10. In the equation of Model 1, the four predictors of design capability explained a significant amount of the incremental variance ($\triangle R^2 = 0.153$) for *direct economic benefit*. Among them, *product-reliability* was a positive predicator (t-value =3.776, $p<0.001$). Furthermore, there is also a significant relationship between the overall set consisting of design capability and the *indirect economic benefit* of business performance ($F=3.712$, $p<0.01$). In the equation of Model 2, the four predictors of design capability explained a significant amount of the incremental variance ($\triangle R^2 = 147$) for *direct economic benefit*. Among them, *product-reliability* (t-value =2.519, $p<0.001$) and *material-aesthetics* (t-value =2.914, $p<0.001$) are two positive predicators. In short, *product-reliability* of design capability has positive effects on *direct economic benefit* and *indirect economic benefit* of business performance, while *material-aesthetics* of design capability has a positive effect on *indirect economic benefit* of business performance.

Table 10 Regression analysis of design capability to business performance

Model	Standardized regression formula	Dependant variable	Standardized coefficient beta	t-value	F-value	$\triangle R^2$	P-value
1	*Direct economic benefit* = $0.438X_1 - 0.091X_2 + 0.050X_3 + 0.066X_4$	*product-reliability* (X_1)	0.438	**3.776*****	3.845	0.153	0.008**
		technology-application(X_2)	- 0.091	- 0.788			
		material-aesthetics (X_3)	0.050	0.428			
		function-usability (X_4)	0.066	0.566			
2	*Indirect economic benefit* = $0.293X_1 + 0.001X_2 + 0.339X_3 - 0.010X_4$	*product-reliability* (X_1)	0.293	**2.519***	3.712	0.147	0.009**
		technology-application (X_2)	0.001	0.005			
		material-aesthetics (X_3)	0.339	**2.914****			
		function-usability (X_4)	- 0.010	- 0.086			

Note: $^{*}p < 0.05$; $^{**}p < 0.001$, $^{***}p < 0.001$

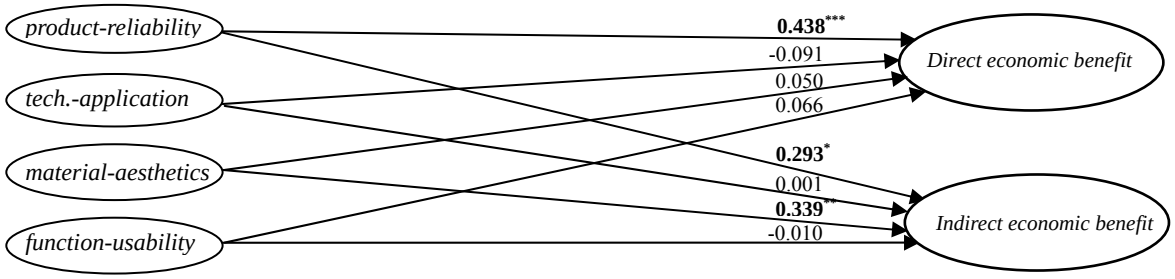

Figure 1 A regression analysis model for direct and indirect economic benefits

5. Concluding Remarks

Rather than focusing on identifying the winners and losers from these design competitions, this study explores the business implication of winning a design award. Based on the data collected from 64 of Taiwan's world-class design-award-winning projects (i.e., G-mark, iF and reddot) during the years 2005 to 2007, there are two major findings in this study. First, as for the requisite of winning a world-class design award, **reddot** receives significantly higher scores on the *product-reliability* of design capability than **iF**. Second, there is no significant relationship between the type of design award and business performance. This study confirms that in order to win a certain world-class design award, a firm better inherits a particular design capability. In this regard, our findings suggest that the organizers of the world-class design competitions need to take into consideration for indentifying the differences of the contestants' perceived design capabilities, as shown in Table 8. We concur that a firm should consider the design award as a benchmark in good design practice rather than a source of creating better economic benefits [18]. Interestingly, statistical results indicate that *product-reliability* of design capability has positive effects on *direct economic benefit* and *indirect economic benefit* of business performance, while *material-aesthetics* of design capability has a positive effect on *indirect economic benefit* of business performance. Therefore, our findings support the notion that design capability has a significant impact on business performance.

Given the paucity of empirical research on the issues examined in this study, these findings must be seen as tentative rather than definitive. Like any empirical research, this study is not without its limitations. The first limitation is the cross-sectional nature of the study, which might limit its ability to capture the causal relationship between research variables. Thus, a longitudinal research approach with multiple informants would be useful for providing evidence of causation. Secondly, the current findings pertain to firms in Taiwan, and results may differ in other settings; therefore, there is a need for future work to validate the findings in other countries. Thirdly, due to the fact that it is difficult to separate out the exact proportion of direct economic benefits (e.g., sales, market shares, or profits) owing exclusively to the design-award-winning project, this study only adopted the comparative indicators for measuring business performance. Therefore, there is also a need for future research to further explore other objective and feasible measures of business performance. Despite these limitations, preliminary implications are useful given the absence of guidelines for managing the relationships between the type of design award, design capability, and business performance, especially when a firm would like to set its design-investment strategies or develop its design capabilities.

Acknowledgements

We would like to gratefully acknowledge the partly financial support received from the National Science Council of the Republic of China Government, under Grant No. NSC 96-2628-E-011-005-MY2.

Citations

[1] Amit, R. and Schoemaker, P. J. H. (1993) Strategic assets and organizational rent, *Strategic Management Journal*, vol. 14, no. 1, pp. 33-46.

[2] Borja de Mozota, B. (2003) *Design Management: using design to building brand value and corporation innovation*, Allworth Communication, New York.

[3] Cantamessa, M. (1999) Design best practices, capability and performance, *Journal of Engineering Design*, vol. 10, no. 4, pp. 305-328.

[4] Collegiate (2003) *Merriam-Webster's Collegiate Dictionary*, 11th ed., Merriam-Webster, Massachusetts.

[5] Garvin, D. A. (1987) Competing on the eight dimensions of quality, *Harvard Business Review*, vol. 65, no. 6, pp. 101-109.

[6] Gemser, G. and Wijnberg, N. M. (2002) The economic significance of industrial design awards: a conceptual framework, *Design Management Academic Review,* vol. 2, no. 1, pp. 61-71.

[7] Good Design Award Office (2005, 2006, 2007) *Japan Good Design Award Yearbook 2005-2006, 2006-2007, 2007-2008*, Japan Industrial Design Promotion Organization, Tokyo.

[8] Guieford, J.P. and Fruchter, B. (1973) *Fundamental Statistics in Psychology and Education*, McGraw-Hill, New York.

[9] iF International Forum Design GmbH. (Ed.) (2005, 2006, 2007) *iF Yearbook Product 05, 2006, 2007*, iF International Forum Design GmbH, Hamburg, Germany.

[10] Kaufman, R. (1988) Preparing useful performance indicators, *Training & Development*, Spring, vol. 42, no. 9, pp. 80-83.

[11] Kotabe, M., Sahay, A., and Aulakh, P. H. (1996) Emerging role of technology licensing in the development of global product strategy: conceptual framework and research propositions, *Journal of Marketing*, vol. 60, no. 1, pp. 73-88.

[12] Marsh, S. J. and Stock, G. N. (2003) Building dynamic capabilities in new product development through intertemporal integration, *Journal of Product Innovation Management*, vol. 20, no. 2, pp. 136-148.

[13] Polonsky, M. J. and Waller, D. S. (1995) Does winning advertising awards pay? The Australian Experience, *Journal of Advertising Research*, Jan./Feb., pp. 25-35.

[14] Rocks, D. (2005) China design, *Business Week*, vol. 21, p. 66.

[15] Stalk, G., Evans, P. and Shulman, L. E. (1992) Competing on capabilities: the new rules of corporate strategy, *Harvard Business Review*, vol. 70, pp. 57-69.

[16] Swan, K. S., Kotabe, M., and Allred B. B. (2005) Exploring robust design capabilities, their role in creating global products, and their relationship to firm performance, *Product Innovation Management*, vol. 22, pp. 144-164.

[17] Teece, D., Pisano, G. and Shuen, A. (1997) Dynamic capabilities and strategic management, *Journal of Strategic Management*, pp. 509–533.

[18] Temple, P. and Swann, P. (1995) Competitions and competitiveness: the case of British Design Awards, *Business Strategy Review*, vol. 6, no. 2, pp. 41-52.

[19] Walker, O.C. Jr. and Ruekert, R.W. (1987) Marketing's role in the implementation of business strategies: a critical review and conceptual framework, *Journal of Marketing*, vol. 51, pp. 15-33.

[20] Zec, P. (Ed.) (2005, 2006, 2007) *Red dot Design Yearbook 2005/2006*, *2006/2007*, *2007/2008*, Red dot Edition, Germany.