

REPORT

ON-LINE QUESTIONNAIRE DE.:SID

Research Project FCT nº PTDC/AUR/70607/2006



Design as a Company's Strategic Resource:
a Study of the Impacts of Design

QUESTIONNAIRE *DE.:SID*: topics

Sample Process

Results of the *De.:SID On-Line* questionnaire

1. Companies Characterization
 2. Perception of the Importance of Design use
 3. Identification of the Design's *Drivers and Enablers*) used by the company
 - 3.1. Top Management
 - 3.2. Context and external entities's management
 - 3.3. Design, Product and Production. Innovation Dynamics
 4. Management Attitude and action towards Design
 - 4.1. Disciplinary and organizational Design borders. Design Human Resources
 - 4.2. Context of Design se in companies. Design spending
 5. Company's evaluation on the Design results
 6. Barriers to the Use of Design
- Conclusive Notes

I) Company's Characterization

Main Locations of the companies

	Frequency	% Valid	% Cumulative
Águeda	5	5,1	5,1
Guimarães	5	5,1	10,2
Aveiro	4	4,1	14,3
Felgueiras	4	4,1	18,4
Maia	4	4,1	22,4
Paços de Ferreira	4	4,1	26,5
do Conde	4	4,1	30,6
	4	4,1	34,7
(...)			
Total	98	100,0	
Missing	1		
Total		99	

Social Capital composition (%) (Portuguese/ Foreign)

	Frequency	% Valid	% Cumulative
100%	85	88,5	88,5
0%	6	6,3	94,8
8%	1	1,0	95,8
30%	1	1,0	96,9
50%	1	1,0	97,9
90%	1	1,0	99,0
95%	1	1,0	100,0
Total	96	100,0	
Missing	3		
Total	99		

Year of the Activity's start

	Frequency	%	% Valid	% Cumulative
Until 1944	13	13,1	13,3	13,3
1945 to 1973	22	22,2	22,4	35,7
1974 to 1989	40	40,4	40,8	76,5
After 1990	23	23,2	23,5	100,0
Total	98	99,0	100,0	
Missing	1	1,0		
Total	99	100,0		

Main sectors of the respondent companies

	Frequency	%	% Valid	% Cumulative
26 – Non Metallic Minerals	15	15,2	15,2	15,2
28 – Metallic Products	12	12,1	12,1	27,3
36 – Furniture	12	12,1	12,1	39,4
15 – Food and Beverages	10	10,1	10,1	49,5
17 – Textiles	6	6,1	6,1	55,6
29 – Equipments and Machinery	6	6,1	6,1	61,6
20 – Wood and	5	5,1	5,1	66,7
31	5	5,1	5,1	71,7
19 – Tanning	4	4,0	4,0	75,8
22 – Editing and Printing	4	4,0	4,0	79,8
21 – Paper	3	3,0	3,0	82,8
24 – Chemicals	3	3,0	3,0	85,9
33	3	3,0	3,0	88,9
18 – Clothing	2	2,0	2,0	90,9
25 – Rubber and Plastics	2	2,0	2,0	92,9
27 – Basic Metallurgic	2	2,0	2,0	94,9
32	2	2,0	2,0	97,0
13 – metallic minerals extraction	1	1,0	1,0	98,0
34	1	1,0	1,0	99,0
35	1	1,0	1,0	100,0
Total	99	100,0	100,0	

Classes of employees at service

	Frequency	%	% Valid	% Cumulative
Until 10	10	10,1	10,3	10,3
11 to 49	17	17,2	17,5	27,8
50 to 99	25	25,3	25,8	53,6
100 to 249	24	24,2	24,7	78,4
Sup. to 250	21	21,2	21,6	100,0
Total	97	98,0	100,0	
Missing	2	2,0		
Total	99	100,0		

Turnover

	Frequency	%	% Valid	% Cumulative
Inf. to 1 million €	16	16,2	18,2	18,2
1 to 5	22	22,2	25,0	43,2
5 to 10	15	15,2	17,0	60,2
10 to 25	17	17,2	19,3	79,5
Sup. to 25 million €	18	18,2	20,5	100,0
Total	88	88,9	100,0	
Missing	11	11,1		
Total	99	100,0		

Level of exports of the companies (% of business volume)

	Frequency	%	% Valid	% Cumulative
No exports	20	20,2	21,1	21,1
Until 10%	15	15,2	15,8	36,8
Between 11 and 25%	8	8,1	8,4	45,3
Between 26 and 50%	15	15,2	15,8	61,1
Between 51 and 75%	11	11,1	11,6	72,6
Over 75%	26	26,3	27,4	100,0
Total	95	96,0	100,0	
Missing	4	4,0		
Total	99	100,0		

Main Type of Clients (2005 to 2007)

	Frequency	%	% Valid	% Cumulative
Other companies	89	89,9	91,8	91,8
Final Consumers	8	8,1	8,2	100,0
Total	97	98,0	100,0	
Missing	2	2,0		
Total	99	100,0		

Main success critical factors of the business area of the companies

	Frequency	%	% Valid	% Cumulative
Quality	25	25,3	27,2	27,2
Design and Technological Innovation	10	10,1	10,9	38,0
Competition	9	9,1	9,8	47,8
Costs / price	8	8,1	8,7	56,5
Market / marketing / Brand	8	8,1	8,7	65,2
Service	6	6,1	6,5	71,7
Human Resources / Training / qualification	6	6,1	6,5	78,3
Location / infrastructure / equipments	5	5,1	5,4	83,7
Management Strategies / Partnership / Organizational Structure	3	3,0	3,3	87,0
Product/ Products mix	2	2,0	2,2	89,1
Customer relationship /satisfaction/ customer's fidelity	2	2,0	2,2	91,3
Raw material	2	2,0	2,2	93,5
Solidity and Financial capability	2	2,0	2,2	95,7
Efficacy/ delivery time /velocity to market	1	1,0	1,1	96,7
Production	1	1,0	1,1	97,8
Relationship quality/ price	1	1,0	1,1	98,9
Flexibility	1	1,0	1,1	100,0

Main Core Competences of the Firm

	Frequency	%	% Valid	% Cumulative
Quality	34	34,3	36,2	36,2
Design and Technological Innovation	13	13,1	13,8	50,0
Human resources/ formation / qualification	8	8,1	8,5	58,5
Market/ marketing / brand	6	6,1	6,4	64,9
Service	5	5,1	5,3	70,2
Efficacy/ deliver time/velocity to market	5	5,1	5,3	75,5
Flexibility	5	5,1	5,3	80,9
Client relationship/satisfaction/fidelity of clients	4	4,0	4,3	85,1
Product / product portfolio	3	3,0	3,2	88,3
Costs / price	2	2,0	2,1	90,4
Production	2	2,0	2,1	92,6
Location/ Facilities / equipments	2	2,0	2,1	94,7
Financial solidity and capacity	2	2,0	2,1	96,8
Raw materials	1	1,0	1,1	97,9
Quality/Price relationship	1	1,0	1,1	98,9
Management strategies	1	1,0	1,1	100,0
Total	94	94,9	100,0	

II) Perception of the Importance of Using Design

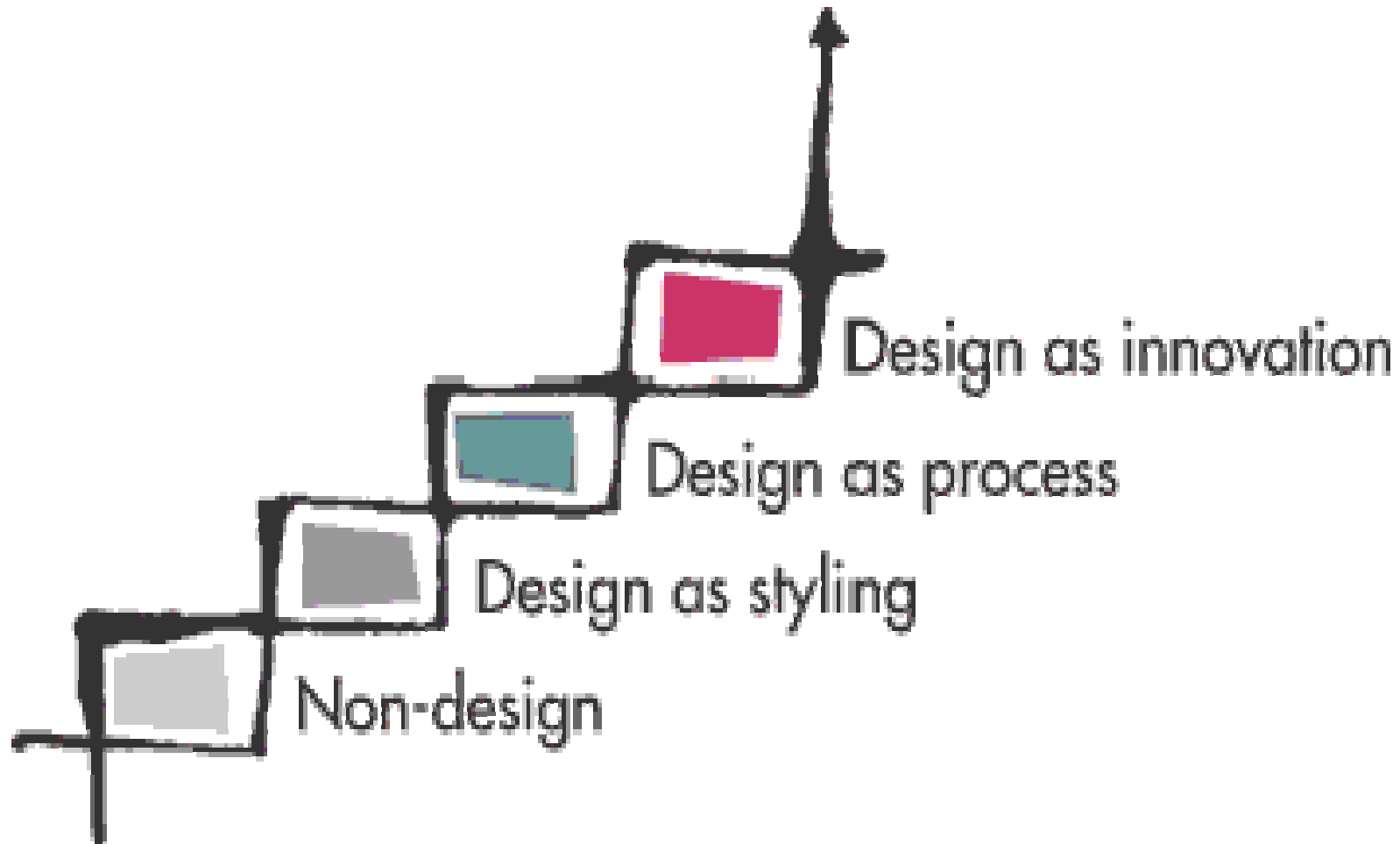
Main concepts associated with Design

	N	Mean	Standard deviation	Coefficient of variation
Innovation	94	2,40	1,95	0,81
Product Development	94	2,17	2,10	0,97
Functionality	94	1,90	2,12	1,11
Quality	94	1,89	2,06	1,09
	94	1,64	2,02	1,24
Aesthetics	94	1,55	2,03	1,31
Marketing	94	1,32	1,93	1,46
Concept Development	94	1,03	1,79	1,74
Technological Development	94	0,80	1,57	1,98
Cost reduction	94	0,77	1,48	1,94
Trends	94	0,73	1,49	2,03
Research	94	0,49	1,23	2,52
Shape aspects	94	0,38	1,19	3,11
Process	94	0,17	0,75	4,45
Sustainability	94	0,16	0,79	4,97
Others	94	0,05	0,51	9,70
N (listwise)	94			

Number of years using Design (Mean)

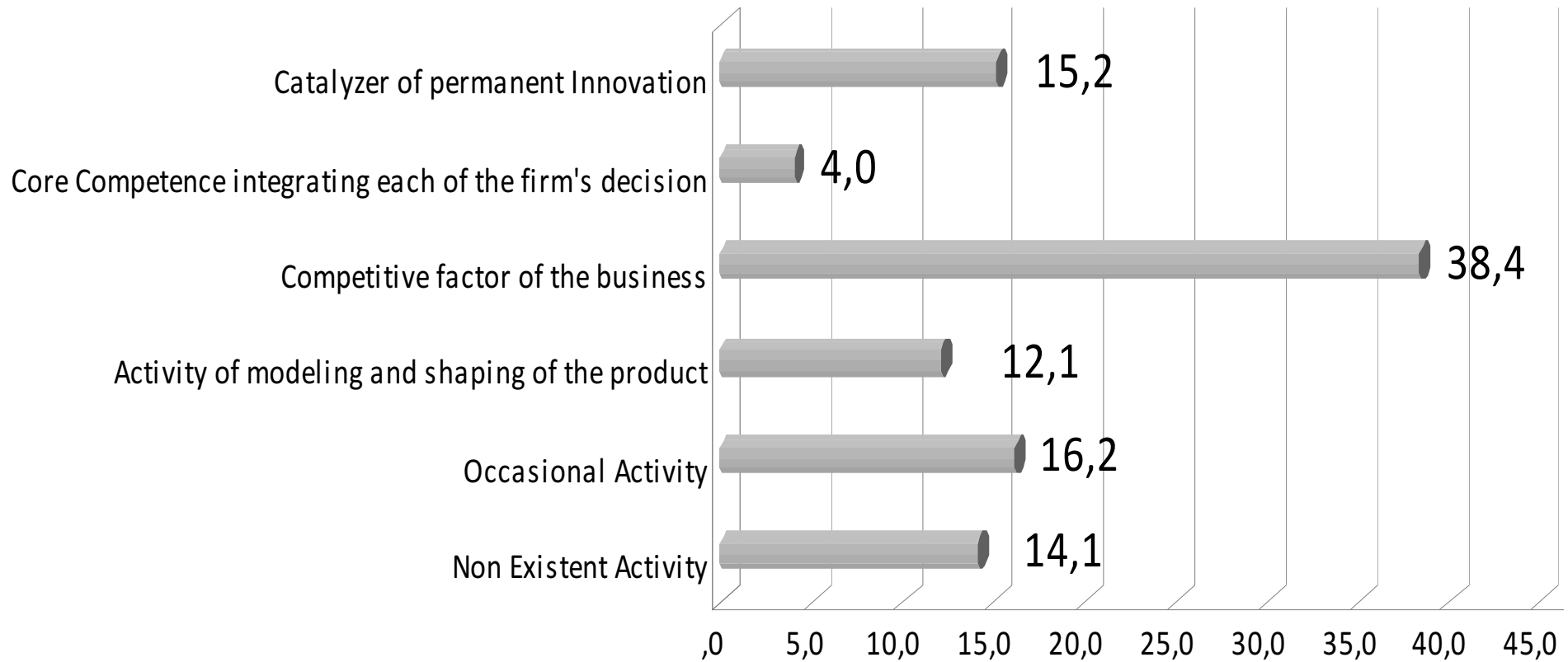
N	Mean	Standard deviation	Variation coefficient
82	15,37	13,11	0,85

The Design Ladder



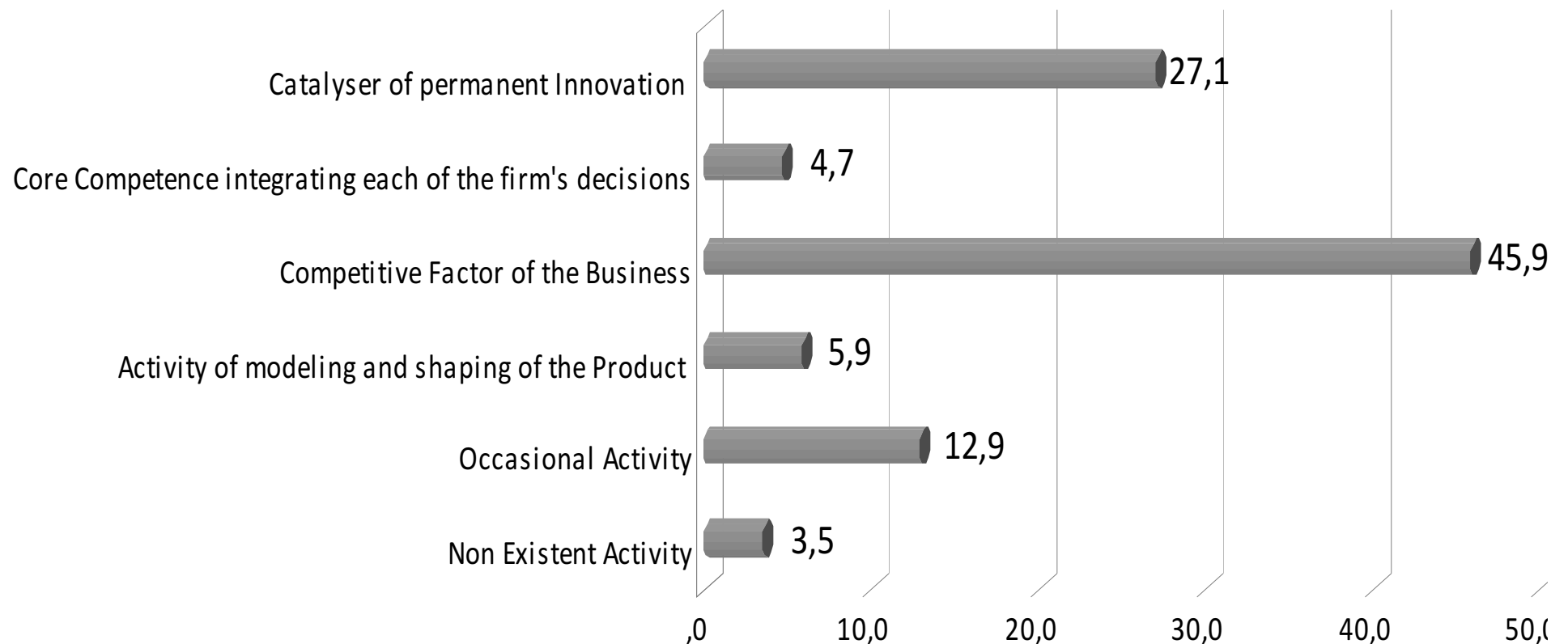
Characterization of Design Activity

(2005 to 2007)



Characterization of Design Activity

(predicted to the period 2008 to 2010)



III) Identification of the Design *Drivers* and *Enablers* used by the Companies

Main Drivers of Design inside the companies

	Mean	St Deviation	Coefficient of variation
Firm: image/ reputation	,73	,444	0,61
Competition: innovation capability	,64	,483	0,76
Firm: product	,57	,497	0,87
Strategy: differentiation	,56	,499	0,88
Clients: quality	,53	,502	0,94
Firm: company's culture	,48	,502	1,05
Industry: Product life cycle	,40	,493	1,22
Strategy: Market niches	,39	,491	1,25
Industry: negotiable power of clients	,39	,491	1,25
Industry: type of products	,38	,489	1,28
Strategy: internationalization	,37	,486	1,31
Competition: strategies	,37	,486	1,31
Industry: technology	,37	,486	1,31
Clients: type of clients	,36	,483	1,34
Clients: client's sophistication	,32	,469	1,47
firm: competences	,32	,469	1,47
Industry: threat of new competitors	,30	,460	1,54
Strategy: diversification	,27	,444	1,67
Firm: production	,21	,411	1,93
Competition: competences	,20	,404	2,00

Involvement of Administration/Management with Design Activity

	Frequency	%	% Valid	% Cumulative
No Involvement	4	4,0	4,9	4,9
Low Involvement – intervenes only in crisis moments	14	14,1	17,3	22,2
Median involvement – participates in decision making moments	37	37,4	45,7	67,9
High Involvement – permanent	26	26,3	32,1	100,0
Total	81	81,8	100,0	
<i>Missing</i>	18	18,2		
Total	99	100,0		

Design Investment Weight in the Cost Structure of the Company

	Frequency	%	% Valid	% Cumulative
Not measured	24	24,2	40,0	40,0
0,5% to 10%	29	29,3	48,3	88,3
11% to 20%	6	6,1	10,0	98,3
21% to 30%	0	0,0	0,0	98,3
31% to 40%	0	0,0	0,0	98,3
More than 41%	1	1,0	1,7	100,0
Total	60	60,6	100,0	
Missing	39	39,4		
Total	99	100,0		

Investments in Design made during the period from 2005 to 2007

Investements in Design	% "YES"
Aquisition of tools, other equipments and software	39,4
Supporting Marketing	31,3
External Knowledge Acquisition	30,3
Education	24,2

Predicted evolution of the Investment in Design (2008 to 2010)

	Frequency	%	% Valid	% Cumulative
Strong Reduction	2	2,0	2,4	2,4
Slight Reduction	1	1,0	1,2	3,6
Maintenance	45	45,5	53,6	57,1
Slight Increase	30	30,3	35,7	92,9
Strong Increase	6	6,1	7,1	100,0
Total	84	84,8	100,0	
<i>Missing</i>	15	15,2		
Total	99	100,0		

Leadership of New R&D, Innovation and Design Projects

	Frequency	%	% Valide	% Cumulative
Top Managers	17	17,2	28,8	28,8
Designers	14	14,1	23,7	52,5
Product managers	10	10,1	16,9	69,5
Product Engineers	7	7,1	11,9	81,4
Expert (Technician)	6	6,1	10,2	91,5
Marketeters	5	5,1	8,5	100,0
Total	59	59,6	100,0	
<i>Missing</i>	40	40,4		
Total	99	100,0		

How de company reacts to competition

	% "YES"
Creating and improving products, processes and services	83,3
Searching new markets	66,7
Introducing changes in the organization	41,7
Increasing Productivity	40,5
Establishing partnerships	32,1
Other Decisions	2,4

Information sources used in the development of new or better products

	N	Mean	Standard Deviation	Coefficient of Variation
Sales force information	83	3,81	1,11	0,29
International Fair's visits	83	3,54	1,37	0,39
Analysis of competitor's products	83	3,51	1,32	0,38
Specific market research	83	3,08	1,41	0,46
Consumer's research	83	2,98	1,52	0,51
National Fair's visits	83	2,40	1,39	0,58
N (listwise)	83			

External Entities involved in the Design Processes

	N	Average (Dicotomic Scale "0-1")	St Deviation	Variation Coefficient	% "YES"
Clients	99	0,364	0,48	1,33	36,4%
Suppliers	99	0,293	0,46	1,56	29,3%
Technological Centers	99	0,242	0,43	1,78	24,2%
Universities	99	0,202	0,40	2,00	20,2%
Research Centers	99	0,152	0,36	2,38	15,2%
Others	99	0,030	0,17	5,69	3,0%
Local Communities	99	0,010	0,10	9,95	1,0%
Finantial Institutions	99	0,010	0,10	9,95	1,0%
N (<i>listwise</i>)	99				

Factors that contribute most to Value in Product

	N	Average	St Deviation	Variation Coefficient
Economic factors (Cost)	84	0,65	,478	0,73
Innovation	84	0,63	0,49	0,77
Atractibility	84	0,40	0,49	1,22
Ability to surprise	84	0,36	0,48	1,35
Reliability	84	0,33	0,47	1,42
Conformity with specifications	84	0,31	0,47	1,50
Performance	84	0,30	0,46	1,55
Utility	84	0,29	0,45	1,59
Security	84	0,29	0,45	1,59
Durability	84	0,27	0,45	1,64
Usability	84	0,24	0,43	1,80
Manufacturability	84	0,23	0,42	1,86
Ability to adapt	84	0,19	0,40	2,07
Identity	84	0,18	0,39	2,16
Simplicity	84	0,12	0,33	2,74
Universal character	84	0,11	0,31	2,90
Recyclability	84	0,05	0,21	4,50
Maintenance	84	0,05	0,21	4,50
Proficiency	84	0,01	0,11	9,17
N (<i>listwise</i>)	84			

Innovation Rate – New and Improved Products and Processes

Innovation rate – New products/New Processes (%)

	2005	2006	2007
Introduction of New Products	47,5	50,5	53,5
Introduction of New Processes	32,3	34,3	44,4

Innovation Rate – Product's Improvement / Process's Improvement (%)

	2005	2006	2007
Improvement of Products	38,4	41,4	46,5
Improvement of Processes	34,3	36,4	40,4

IV) Attitude and action of the company's management towards design

Existence of a Design Department in the Company

	Frequency	%	% Valid	% Cumulative
Yes	40	40,4	53,3	53,3
No	35	35,4	46,7	100,0
Total	75	75,8	100,0	
Missing	24	24,2		
Total	99	100,0		

Association of Design Activity to a specific department

Departments/Sections	Mean (Dichotomy scale "0-1")	ST Deviation	Coefficient of Variation	% "YES"
R&D Department	,364	,48	1,33	36,4%
Marketing Department	,343	,48	1,39	34,3%
Simultaneously to various departments/sections	,232	,42	1,83	23,2%
Production Department	,131	,34	2,59	13,1%
Any other situation	,020	,14	7,00	2,0%

Persons in the Company that most directly work with Design

	N	Mean (Dichotomy scale "0-1")	Standard Deviation	Coefficient of Variation	% "Yes"
Product Development	99	0,43	0,49	1,15	43,4
Marketing and sales/after sales service	99	0,40	0,49	1,22	40,4
R&D	99	0,32	0,47	1,45	32,3
Production process development/ Technology	99	0,28	0,45	1,60	28,3
Others	99	0,05	0,22	4,36	5,1
N (listwise)	99				

Number and education level of persons developing design inside the firms

Level of Education from people working with Design and having Design background

	N	Total	%	Mean	ST Deviation
Basic/high School	72	33	15,3%	,46	1,100
11/12º year high school	72	53	24,7%	,74	1,075
Bachelor:	72	17	7,9%	,24	,517
Graduation 5/6 years	72	98	45,6%	1,36	1,698
Post-graduation	72	14	6,5%	,19	,547
General Total		215			

Level of Education from people working with Design and having a background from other areas

	N	Total	%	Mean	ST Deviation
Basic/high School	72	205	55,0%	2,85	9,540
11/12º year high school	72	67	18,0%	,93	2,210
Bachelor:	72	11	2,9%	,15	,433
Graduation 5/6 years	72	81	21,7%	1,13	2,169
Post-graduation	72	9	2,4%	,13	,409
General Total		373			

Source of Design Activity

	Frequency	%	% Valid	% Cumulative
External	9	9,1	11,0	11,0
Internal	25	25,3	30,5	41,5
Both	48	48,5	58,5	100,0
Total	82	82,8	100,0	
<i>Missing</i>	17	17,2		
Total	99	100,0		

Design Services and activities developed internally or outsourced

		N	Total	Mean (Dichotomy Scale "0-1")	Standard Deviation	Coefficient of Variation
Internally	Product Development	99	63	0,64	0,48	0,76
	model construction /prototyping	99	53	0,54	0,50	0,94
	Communication Design	99	40	0,40	0,49	1,22
	Design	99	38	0,38	0,49	1,27
	Packaging Design	99	38	0,38	0,49	1,27
	Concept Design	99	37	0,37	0,48	1,30
	Exhibit Design	99	36	0,36	0,43	1,33
	Interface Design	99	28	0,28	0,43	1,60
	digital and multimedia Design	99	26	0,26	0,42	1,68
	Interior Design (...)	99	25	0,25	0,44	1,73
	Total ("internally")		431			
Externally	Product Development	99	35	0,35	0,48	1,36
	model construction /prototyping	99	34	0,34	0,48	1,39
	Communication Design	99	28	0,28	0,45	1,60
	Design	99	25	0,25	0,44	1,73
	Packaging Design	99	25	0,25	0,44	1,73
	Concept Design	99	24	0,24	0,43	1,78
	Exhibit Design	99	24	0,24	0,43	1,78
	Interface Design	99	23	0,23	0,42	1,83
	digital and multimedia Design (...)	99	23	0,23	0,42	1,83
	Total ("externally")		287			
TOTAL		718				

Spent Value in Design activities done internally and outsourced (Euros)

		N	Maximum	Total	Mean	Standard Deviation	Coefficient of Variation
Internally	Global value spent in design activities internally: 2005	60	675.533,0	3.687.694,0	61.461,6	116.038,9	1,89
	Global value spent in design activities internally: 2006	60	555.934,0	4.096.854,0	68.280,9	114.069,7	1,67
	Global value spent in design activities internally: 2007	60	466.736,0	4.605.590,0	76.759,8	123.168,6	1,60
Externally	Global value spent in outsourced design activities: 2005	60	339.213,0	1.437.168,0	23.952,8	59.079,8	2,47
	Global value spent in outsourced design activities: 2006	60	462.589,0	1.765.022,0	29.417,0	78.847,7	2,68
	Global value spent in outsourced design activities: 2007	60	300.000,0	1.503.599,0	25.060,0	57.181,6	2,28

V) Company's Evaluation on the Design Results

Possible Indicators to measure Design Quality

	Frequency	%	% Valid	% Cumulative
Response and acceptance from market/ clients	23	23,2	34,8	34,8
Sales	15	15,2	22,7	57,6
Product's Adequacy	5	5,1	7,6	65,2
Brand/Firm/Product Awareness	5	5,1	7,6	72,7
Image	3	3,0	4,5	77,3
Quality	3	3,0	4,5	81,8
Clients/Markets capture	2	2,0	3,0	84,8
Innovation	2	2,0	3,0	87,9
Peers Recognition	1	1,0	1,5	89,4
Concept	1	1,0	1,5	90,9
Production Improvement	1	1,0	1,5	92,4
Communication	1	1,0	1,5	93,9
Product Development	1	1,0	1,5	95,5
Introduction of New Product	1	1,0	1,5	97,0
Clients Panel	1	1,0	1,5	98,5
Design rigor	1	1,0	1,5	100,0
Total	66	66,7	100,0	
<i>Missing</i>	33	33,3		
Total	99	100,0		

Evaluation of the impact of Design Use (2005-2007)

Parameters	Mean	St Deviation	Coefficient of Variation
Firm's Image	4,17	,971	0,23
Communication with Clients	3,76	,992	0,26
Customer's Satisfaction	3,70	1,120	0,30
Increase in the firm's Competitiveness	3,63	1,305	0,36
Increase in the product's Quality	3,61	1,234	0,34
More client's retention	3,58	1,146	0,32
Sales Increase	3,53	1,194	0,34
Increase of products in portfolio	3,51	1,474	0,42
Increase in the number of new customers	3,46	1,183	0,34
Increase of Added Value	3,41	1,288	0,38
Entrance in New Markets	3,22	1,420	0,44
Increase in Market Share	3,18	1,219	0,38
Increase in the employees satisfaction	3,07	1,350	0,44
Positive variation in return on investment	3,04	1,270	0,42
Raise in the profit margin per product/service	2,89	1,362	0,47
Increase in form's productivity	2,89	1,217	0,42
Profit increase	2,74	1,320	0,48
Increase in production's flexibility	2,58	1,268	0,49
Attainment to regulation requests	2,58	1,339	0,52

VI) Barriers to the Use of Design

Existence of "Barriers" (on the part of firms) to the use of Design

	Frequency	%	% Valid	% Cumulative
No	66	66,7	69,5	69,5
Yes	29	29,3	30,5	100,0
Total	95	96,0	100,0	
Missing	4	4,0		
	99	100,0		

Global Analysis of the Barriers to the Use of Design

	Mean	St Deviation	Coefficient of Variation
Resistance to Change (business aspects)	2,48	2,15	0,87
High Costs of Design (economic-financial aspects)	2,38	1,97	0,83
Easiness of copying by competition (business aspects)	2,31	2,22	0,96
Lack of R&D activity (business aspects)	2,14	2,20	1,03
Uncertainty regarding the outcomes of Design Activity (business aspects)	2,03	1,97	0,97
High Commercial risks (economic-financial aspects)	2,03	2,03	1,00
Lack of State support (business aspects)	2,00	2,24	1,12
Long Period to return on Investment (economic-financial aspects)	1,93	2,02	1,04
Lack of Time (business aspects)	1,86	1,90	1,02
Week dimension of the market (economic-financial aspects)	1,79	1,88	1,05
Low return on Investment (economic-financial aspects)	1,72	1,79	1,04
Difficulty differentiating Products and processes (business aspects)	1,66	1,63	0,99
Lack of market's information (business aspects)	1,59	1,92	1,21
Ignorance about the opportunities Design creates (institutional aspects)	1,45	1,80	1,25
Scarceness of technical professional external services (institutional aspects)	1,41	1,84	1,30
Lack or debility of the technological infra-structures (business aspects)	1,41	1,84	1,30
Lack of information about Design Technologies (business aspects)	1,38	1,70	1,23
Absence of cooperation with the Designers' Community (business aspects)	1,38	2,09	1,52
Lack of leadership skills on the part of Designers (Business aspects)	1,38	1,70	1,23
Lack of Demand (Institutional Aspects)	1,34	1,45	1,08
Low qualification of employees (economic-financial aspects)	1,34	1,74	1,29
Difficulties in financing (economic-financial aspects)	1,34	1,97	1,46

Conclusive Notes

- **“De.:SID survey” allowed us to understand in broader terms the way business field evaluates the role of Design and designers.**
- **From a brief analysis of the survey results it is also possible to acknowledge that Portuguese firms in general still underestimate the potential of Design as a strategic resource.**
- **The relationship of Design and Innovation is also relevant since for the majority of firms. Design is a fundamental driver of the innovation dynamic.**
- **The Portuguese Design development sooner or later will claim a notion and development of a “Design National System”.**