

Appendices graduation report

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Analyzing..

..researching

...and designing the shoe of tomorrow

Appendix 1: Saxa ESD S2 size 42

Parts	Materials and processing	Kg/pair	Source	Eco-cost/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair
Upper	Steel (for toecap)	0,2268	Idemat2010 Steel (21% secondary = market mix average)	0,494	1,609	0,111975245	0,180135422
	Cutting and Deep drawing		Idemat2010 Rolling steel	0,029	0,051	0,006590246	0,011653048
	PVC strip on toecap	0,01	Idemat2010 PVC	0,651	2,006	0,00650653	0,020063581
	Cutting and gluing		Not counted				
	Polyester mesh	0,0116	Idemat2010 Polyester fabric	2,193	8,207	0,025441874	0,095199043
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,007981614	0,014314629
	Nubuck leather	0,127	Idemat2010 Leather	0,665	2,401	0,084433437	0,304959399
	Leather cutting and sewing		Counted in material			0	0
	Split leather	0,0112	Idemat2010 Leather	0,665	2,401	0,007446098	0,026894057
	Leather cutting and sewing		Counted in material			0	0
	Side textile (polyester/nylon mix)	0,0114	Idemat2010 Polyester fabric*0,5+Nylon 6, at plant/RERS (Ecoinvent)*0,5	1,86523255	8,738	0,021263651	0,09961214
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,007844	0,014067825
	Front strip (polyester)	0,0052	Idemat2010 Polyester fabric	2,193	8,207	0,011404978	0,042675433
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,003577965	0,006416903
	4 Logo's (PVC)	0,008	Idemat2010 PVC	0,651	2,006	0,005205224	0,016050865
	Injection molding		Idemat2010 Injection moulding PVC	0,145	0,280	0,001162816	0,002240009
	Lining material (polyester)	0,062	Idemat2010 Polyester fabric	2,193	8,207	0,13598243	0,508822473
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,042660351	0,076509226
	Heel counter (TPR)	0,0122	Idemat2010 NBR	0,996	1,823	0,012149129	0,022242435
	Cutting and bending		Idemat2010 Thermo forming	0,159	0,530	0,001944453	0,006466014
	Laces	0,0122	Idemat2010 Polyester fabric	2,193	8,207	0,026757833	0,100123132
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,008394456	0,015055041
	Strip (PVC)	0,003	Idemat2010 PVC	0,651	2,006	0,001951959	0,006019074
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,002064211	0,004
	4 Eyelets (PVC)	0,0028	Idemat2010 PVC	0,651	2,006	0,001821829	0,005617803
	Injection molding		Idemat2010 Injection moulding PVC	0,145	0,280	0,000406986	0,000784003
	Synthetic leather (PU)	0,003	Idemat2010 PUR flex. moulded. MDI	1,369	4,183	0,004108105	0,012549735
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,002064211	0,003702059
	Textile under leather (cotton/polyester mixed)	0,003	Idemat2010 Cotton fabric*0,50+Idemat2010 Polyester fabric*0,50	2,15976625	5,747399815	0,006479299	0,017242199
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,002064211	0,003702059
	Yarn (polyester)	0,003	Idemat2010 Polyester fabric	2,193	8,207	0,006579795	0,024620442
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,002064211	0,003702059
	Glue	0,003	Idemat2010 MF (resin)	0,950	3,419	0,002850426	0,01025593
Loose insole	Insole (ströbelsole)	0,036	Idemat2010 Polyester fabric	2,193	8,207	0,07895754	0,295445307
	Textile processing		Idemat2010 Textile processing	0,688	1,234	0,024770526	0,044424712

Midsole and Outsole	RVS (needle-punched)	0,001	Idemat2010 X6CrNi18 (~304)*0,60 + CES RVS recycled *0,40	0,812	1,813	0,000812124	0,001812867
	Punching		Not counted			0	
	PE-foam (polyethyleen)	0,021	Idemat2010 PE (LDPE)	1,058	2,098	0,022210686	0,044064921
	Thermomolded		Idemat2010 Thermo forming	0,159	0,530	0,003347009	0,011130025
	Feltmaterial (Polyester/Viscose)	0,017	Idemat2010 Cotton fabric*0,50+Idemat2010 Polyester fabric*0,50	2,15976625	5,747399815	0,036716026	0,097705797
	Thermomolded		Idemat2010 Thermo forming	0,159	0,530	0,002709484	0,00901002
	PU (polyurethane)	0,61	Idemat2010 PUR flex. moulded. MDI	1,369	4,183	0,835314663	2,551779518
	Injection molding		Addition of energy and molds (separate calculation)			0,1884	1,05
	Paint	0,01	Idemat2010 Alkyd paint white, liquid, solvent based	2,863	2,862	0,028628076	0,0286227
	ABS	0,024	Idemat2010 ABS	1,335	3,400	0,032034773	0,0816
	TPU	0,026	Idemat2010 PUR flex. moulded. MDI	1,369	4,183	0,035603576	0,108764373
	Injection molding		Idemat2010 Injection moulding	0,257	1,333	0,00016047	0,034661494
	Cardboard consumer packaging	0,165	FEFCO&Ecoinvent: Corrug board testliner*0,70+ Corrug board kraftliner*0,30	0,0946714	0,77	0,015620781	0,12705
	Paper manual	0,013	Idemat2010 Paper, woodfree coated	0,282	1,264	0,003669019	0,016427711
	Cutted and printed		Not counted			0	
				Total materials product and packaging		1,482967565	4,550911051
				Total production product and packaging		0,308207219	1,326

Parts	Production waste	Kg/pair	Source	Eco-cost/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair
Production waste uppers	Steel market mix	0,061236	Idemat2010 Steel (21% secondary = market mix average)	0,494	1,609	0,030233316	0,098510816
	Polyester	0,02944	Idemat2010 Polyester fabric	2,193	8,207	0,064569722	0,241608606
	Cotton-polyester mix	0,0046	Idemat2010 Cotton fabric*0,50+Idemat2010 Polyester fabric*0,50	2,15976625	5,747399815	0,009934925	0,026438039
	PVC	0,0015	Idemat2010 PVC	0,651	2,006	0,00097598	0,003009537
	polyester-Nylon mix	0,00456	Idemat2010 Polyester fabric*0,5+Nylon 6, at plant/RIERS (Ecoinvent)*0,5	1,86523255	8,738	0,00850546	0,039844856
	Leather	0,04034	Idemat2010 Leather	0,665	2,401	0,026819251	0,096866631
	Synthetic leather (PU)	0,0015	Idemat2010 PUR flex. moulded. MDI	1,369	4,183	0,002054052	0,006274868
	TPR	0,00244	Idemat2010 NBR	gara	1,823	0,002429826	0,004448487
Production waste packaging	Cardboard	0,0165	FEFCO&Ecoinvent: Corrug board testliner*0,70+ Corrug board kraftliner*0,30	0,0946714	0,77	0,001562078	0,012705
Production waste loose insoles	PE	0,0042	Idemat2010 PE (LDPE)	1,058	2,098	0,004442137	0,008812984
Production waste outsoles and midsoles	PU	0,03	Idemat2010 PUR flex. moulded. MDI	1,369	4,183	0,041081049	0,125497353
Production waste strobelsoles	Polyester	0,0072	Idemat2010 Polyester fabric	2,193	8,207	0,015791508	0,059089061
				Total materials production waste		0,208399304	0,723106239

Parts	Transport	Kg/pair	1000 Km	Source	Eco-costs/tKm	Carbon footprint/tKm	Eco-costs/a pair	Carbon footprint/ a pair	360/kg/m^3
Toecaps	Saverne-Rotterdam by truck	0,2368	0,525	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,004479375	0,011868354	heavy enough
Toecaps	Rotterdam-Qingdao by sea	0,2368	22,874	Idemat2010 Container ship (min specific gravity 0,84)	0,005	0,011	0,028173566	0,058040561	heavy enough
Toecaps	Qingdao-Springwell by truck	0,2368	0,057	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000486332	0,001288564	heavy enough
Ströbelsoles	Prato-Livorno by truck	0,036	0,1	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000259423	0,000687356	2
Ströbelsoles	Livorno-Qingdao by sea	0,036	18,91	Idemat2010 Container ship (min specific gravity 0,84)	0,005	0,011	0,007081774	0,014589211	2
Stöbelsoles	Qingdao-Springwell by truck	0,036	0,057	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000147871	0,000391793	2
Uppers	Springwell-Qingdao	0,5514	0,057	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,001774455	0,004701518	1,566920566
Uppers	Qingdao-Rotterdam	0,5514	22,874	Idemat2010 Container ship (min specific gravity 0,84)	0,005	0,011	0,102795444	0,211769615	1,566920566
Uppers	Rotterdam-Best	0,5514	0,1	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,003113079	0,008248277	1,566920566
Loose insoles	Rieschweiler-Mulbach-Best by truck	0,039	0,389	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,001009157	0,002673816	1,846153846
Packaging	Eerbeek-Best by truck	0,178	0,11	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000705487	0,001869228	heavy enough
Shank	Montebelluna-Best by truck	0,05	1,099	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,001979904	0,005245866	heavy enough
Product+packaging	Best-Ahrensfelde OT Blumberg	1,4384	0,69	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,070705815	0,187338994	1,977196885
Total transport							0,222711683	0,508713154	

Parts	Materials EOL	Kg/pair	Source	Eco-costs/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/ a pair
EOL product	Steel	0,2278				0	0
	PVC	0,0238	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110	0,756	0,002611029	0,017995559
	(T)PU	0,639	Idemat2010 Polyurethane (elPU) waste incineration with electricity	0,184	1,235	0,117407687	0,789426091
	Polyester	0,1097	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	0,024449525	0,165083418
	Cotton	0,01	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,001105279	-0,006207086
	Nylon	0,0057	Idemat2010 Polyamides (Nylons, PA) waste incineration with electricity	0,175	1,216	0,000998702	0,006933063
	TPR	0,0122	Idemat2010 Styrene butadiene rubber (SBR) waste incineration with electricity	0,225	1,578	0,002739635	0,019250054
	Leather	0,1382	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,015274959	-0,08578193

Cardboard	0,165	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,005471132	-0,10241692
Paper	0,013	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,001436863	-0,008069212
PE	0,021	Idemat2010 Polyethylene (PE) waste incineration with electricity	0,211	1,497	0,004430507	0,031429107
ABS	0,024	Idemat2010 Acrylonitrile butadiene styrene (ABS) waste incineration with electricity	0,254	1,736	0,006084786	0,041654727
polyester	0,036	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	0,008023545	0,054175051
EOL post-consumer waste					0,143457182	0,923471922
Steel	0,061236				0	0
PVC	0,0015	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110	0,756	-0,001733776	-0,004185558
PU	0,0315	Idemat2010 PUR (Polyethane), recycling credit	-1,156	-2,790	0,007020602	0,047403169
Polyester	0,03402	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	-0,00376016	-0,021116507
Cotton	0,0023	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	0,000402985	0,002797552
Nylon	0,00228	Idemat2010 Polyamides (Nylons, PA) waste incineration with electricity	0,175	1,216	0,000511997	0,003597551
TPR	0,00244	Idemat2010 Styrene butadiene rubber (SBR) waste incineration with electricity	0,225	1,578	0,000547927	0,003850011
Leather	0,04034	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,004458696	-0,025039385
Cardboard	0,0165	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,000547113	-0,010241692
material strobelsole	0,0072	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	0,001604709	0,01083501
PE	0,0042	Idemat2010 Polyethylene (PE) waste incineration with electricity	0,211	1,497	0,000886101	0,006285821
EOL production waste					0,000474576	0,014185972

Appendix 2: BATA Sherry 552-5074 size 37

Parts	Materials and processing	Kg/pair	Source	Eco-cost/Kg(MJ)	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair
Product	PVC	0,43	Idemat2010 PVC	0,651	2,006	0,279780807	0,862734004
	Acrylic flocking powder	0,012	Idemat2010 PMMA	1,780	7,121	0,021360948	0,08544898
	Production Bata factory electricity (KwH*3,6/a pair)	0,8784	Idemat2010 Electricity General (UCTE) (MJ)	0,026	0,148	0,023074919	0,129585368
	Mould (55.000 pairs/ a mold)	0,000541818	Idemat2010 Aluminium trade mix (65% prim 35% sec)	2,748	8,434	0,001489187	0,004569442
	Production mold		Idemat2010 Forging aluminium	0,042	0,238	2,29154E-05	0,000128689
Packaging	Plastic bag, recycled PVC (50%)	0,0034	Idemat2010 PVC, recycled (estimate)	0,218	1,114	0,000740943	0,003787256
	Cardboard box (50%)	0,0607	FEFCO&Ecoinvent: Corrug board kraftliner	0,118708	0,658	0,007205576	0,0399406
	Cutting, and guing		Not counted				
	Cardboard box (0.069*0.061*0,0325)	0,02	FEFCO&Ecoinvent: Corrug board kraftliner	0,118708	0,658	0,00237416	0,01316
No production waste							
Total materials product and packaging						0,311462434	1,00507084
Total production product and packaging						0,024587021	0,134283499

Parts	Transport	Kg/pair	1000 Km	Source	Eco-costs/tKm	Carbon footprint/tKm	Eco-costs/a pair	Carbon footprint/ a pair	360/kg/m^3
Transport packaging	Bogor-Jakarta	0,02	0,05	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	3,6031E-05	9,54662E-05	heavy enough
Shoes and packaging Plastic bags and cardboard boxes are produced by local suppliers in Jakarta	Jakarta-retail	0,5061	0,3	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,031130794	0,082482771	5,690574985
Total transport							0,031166825	0,082578237	

Parts	Materials EOL	Kg/pair	Source	Eco-costs/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/ a pair
Product	PVC	0,43	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110	0,756	0,047174044	0,325129848
	Acrylic flocking powder	0,012	Idemat2010 Polymethyl methacrylate (Acrylic, PMMA) waste incineration with electricity	0,181	1,233	0,002167573	0,014794369
Packaging	Plastic bag, recycled PVC (50%)	0,0034	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110	0,756	0,000373004	0,002570794
	Cardboard box (50%)	0,0607	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,006709045	-0,037677012
	Cardboard box (0.069*0.061*0,0325)	0,02	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,002210558	-0,012414172
					Total EOL waste incineration	0,040795019	0,292403827
Product	PVC	0,43	Idemat2010 landfill	0,118	0,000	0,050826	0
	Acrylic flocking powder	0,012	Idemat2010 landfill	0,118	0,000	0,0014184	0
Packaging	Plastic bag, recycled PVC (50%)	0,0034	Idemat2010 landfill	0,118	0,000	0,00040188	0
	Cardboard box (50%)	0,0607	Idemat2010 landfill	0,118	0,000	0,00717474	0
	Cardboard box (0.069*0.061*0,0325)	0,02	Idemat2010 landfill	0,118	0,000	0,002364	0
					Total EOL landfill	0,06218502	0
Product	PVC	0,43	Idemat2010 PVC (Polyvinylchloride), recycling credit	-0,433	-0,892	-0,186073345	-0,383757545
	Acrylic flocking powder	0,012	Idemat2010 PMMA, Acrylic (Polymethyl methacrylate), recycling credit	-1,471	-5,496	-0,01765358	-0,000211843
Packaging	Plastic bag, recycled PVC (50%)	0,0034				0	0
	Cardboard box (50%)	0,0607				0	0
	Cardboard box (0.069*0.061*0,0325)	0,02				0	0
					Total EOL recycling	-0,203726926	-0,383969388

Appendix 3: BATA thong 572-5099 size 37

Parts	Materials and processing	Kg/pair	Source	Eco-cost/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair
Thongs	EVA	0,073041143	Idemat2010 EVA (ethylene vinyl acetate) estimate	1,144	3,054	0,083535234	0,223049649
	EVA recycled	0,011233858	Idemat2010 EVA, recycled (estimate)	0,265	1,379	0,00297932	0,015496462
	Paint	0,00000417	Idemat2010 Alkyd paint white, liquid, water based	2,791	2,738	1,16381E-05	1,14175E-05
	PVC	0,0516	Idemat2010 PVC	0,651	2,006	0,033573697	0,10352808
	Injection molding PVC		Idemat2010 Injection moulding PVC	0,145	0,280	0,007500165	0,014448061
	Production Bata factory gas (MJ/a pair)	0,5868	Idemat2010 Energy gas, low NOx (=heat)	0,012	0,082	0,007035274	0,047935975
	Production Bata factory electricity (MJ/a pair)	0,7416	Idemat2010 Electricity General (UCTE) (MJ)	0,026	0,148	0,019481284	0,10940404
	Cutting, Painting and Assembling		Not counted				
	Rubber	0,000326	Idemat2010 Natural rubber	0,098	0,207	3,18464E-05	6,73875E-05
Consumer packaging	Paper bag	0,0138	Idemat2010 Paper, woodfree coated	0,282	1,264	0,003894805	0,017438647
	Cutting, and guing		Not counted				
Transport packaging	Plastic bag (LDPE)	0,002841667	Idemat2010 PE (LDPE)	1,058	2,098	0,003005494	0,005962753
Production waste	EVA cutting waste and bad sheet	0,001283333	Idemat2010 EVA (ethylene vinyl acetate) estimate	1,144	3,054	0,001467715	0,003918984
		0,00055	Idemat2010 EVA, recycled (estimate)	0,265	1,379	0,000145865	0,000758693
			Total Materials product, packaging and production waste			0,128645613	0,370232073
			Total Production product and packaging			0,034016724	0,171788075

Parts	Transport	Kg/pair	1000 Km	Source	Eco-costs/tKm	Carbon footprint/tKm	Eco-costs/a pair	Carbon footprint/a pair	360/kg/m^3
All intermediates of the product are produced by suppliers in Dhaka, near to the Bata Tongi factory									
Product in plastic bag	Tongi Bata factory-retail stores	0,124971313	0,072022727	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,051884656	0,137471285	11,5226444
				Total transport			0,051884656	0,137471285	

Parts	Materials EOL	Kg/pair	Source	Eco-costs/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/ a pair
Thongs and packaging	EVA (recycled)	0,011233858			0		
	EVA landfill	0,073041143	Idemat2010 landfill	0,118	0,000	0,008633463	0
	Paint	0,00000417	Not counted				
	PVC	0,0516	Idemat2010 landfill	0,118	0,000	0,00609912	0
	Rubber	0,000326	Idemat2010 landfill	0,118	0,000	3,85332E-05	0
	Paper bag	0,0138	Idemat2010 landfill	0,118	0,000	0,00163116	0
	Plastic bag (LDPE)	0,002841667	Idemat2010 landfill	0,118	0,000	0,000335885	0
Production waste	EVA cutting waste and bad sheet (recycled)	0,00055			0		
	EVA cutting waste and bad sheet (virgin)	0,001283333	Idemat2010 EVA (Ethylene vinyl acetate), recycling credit	-0,878	-1,674	-0,001127363	-0,002148699
Total EOL						0,015610798	-0,002148699

Appendix 4: BATA Ambassador size 41

Parts shoe	Materials and processing	Kg/pair - MJ/pair	Source	Eco-cost/Kg(MJ)	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair	
Upper	Leather Roma baby (for upper)	0,222	Idemat2010 Leather	0,665	2,401	0,147592307	0,032765492	
	Leather lining (for upper)	0,09	Idemat2010 Leather	0,665	2,401	0,059834719	0,21611296	
	Leather heel grip lining (for upper)	0,01	Idemat2010 Leather	0,665	2,401	0,006648302	0,024012551	
	Production Hugo Boss factory (KwH*3,6/a pair)	12	Idemat2010 Electricity General (UCTE) (MJ)	0,026	0,148	0,315231132	1,770291911	
	Outsole: 50% leather, 50% PVC	0,648	Idemat2010 Leather*0,5+Idemat2010 PVC *0,5	0,657741625	2,20380663	0,426216573	1,428066696	
	Processing leather		Counted in material					
	Processing PVC		Idemat2010 Injection moulding PVC	0,145	0,280	0,047094061	0,090720382	
Insole	90% paper, 10% steel	0,14	Idemat2010 Paper, woodfree coated*0,5+Idemat2010 Steel (21% secondary = market mix average)*0,1	0,303	1,298	0,042473317	0,181744335	
	Cutting and pressing paper		Not counted					
	Cutting and pressing steel	0,014	Idemat2010 Rolling steel	0,029	0,051	0,000406805	0,000719324	
Reinforcement	Reinforcement 1 (cotton)	0,033	Idemat2010 Cotton fabric	2,126	3,288	0,070166828	0,108503523	
	Processing cotton		Idemat2010 Textile processing	0,688	1,234	0,022706316	0,040722653	
	Reinforcement 2 (50% polyester, 40 % latex, 10 % polychloroprene)	0,00754	Idemat2010 Polyester fabric*0,50+Idemat2010 natural rubber*0,40+Idemat2010 Polychloroprene*0,10	1,246	4,557	0,009395629	0,03435707	
	Processing textile		Idemat2010 Textile processing	0,688	1,234	0,005188049	0,009304509	
	Yarn	0,0075	Idemat2010 Polyester fabric	2,193	8,207	0,016449488	0,061551106	
	Processing textile		Idemat2010 Textile processing	0,688	1,234	0,005160526	0,009255148	
	Toecap	Toecap	0,015	Idemat2010 Polychloroprene (Neoprene, CR) estimate	1,103	3,704	0,016540817	0,055565038
Counter	Cutting and bending		Idemat2010 Thermo forming	0,159	0,530	0,002390721	0,007950018	
	Counter	0,036	Idemat2010 Leather	0,665	2,401	0,023933888	0,086445184	
	Processing leather		Counted in material					
	Laces	0,003	Idemat2010 Cotton fabric	2,126	3,288	0,006378803	0,009863957	
	Pictogram	0,002	FEFCO&Ecoinvent: Corrug board kraftliner	0,118708	0,658	0,000237416	0,001316	
	Processing cotton		Idemat2010 Textile processing	0,688	1,234	0,003440351	0,00246804	
	Glue	0,003	Idemat2010 MF (resin)	0,950	3,419	0,002850426	0,01025593	
Consumer packaging					Materials product	0,82871851	2,250559842	
					Production product	0,401617962	1,931431984	
	Cardboard (virgin)	0,326	FEFCO&Ecoinvent: Corrug board kraftliner	0,118708	0,658	0,038698808	0,214508	
	Cuttetd and printed		Not counted					
Transport packaging	Cotton	0,034	Idemat2010 Cotton fabric	2,126	3,288	0,072293095	0,111791509	
	Processing cotton		Idemat2010 Textile processing	0,688	1,234	0,023394386	0,041956672	
		0,10416666						
	Cardboard, recycled (assumed 12 pair/a box)	7	FEFCO&Ecoinvent: Corrug board testliner	0,08437	0,818	0,008788542	0,085208333	
	Cuttetd and printed		Not counted			Materials packaging	0,119780445	0,411507842
						Production packaging	0,023394386	0,041956672

	Materials and processing	Kg/pair - MJ/pair	Source	Eco-cost/Kg(MJ)	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/a pair
Materials pre-consumer waste	Leather (counter)	0,0072	Idemat2010 Leather	0,665	2,401	0,004786778	0,017289037
	Leather (upper)	0,0956	Idemat2010 Leather	0,665	2,401	0,063557768	0,229559989
	Paper (virgin)	0,0578	FEFCO&Ecoinvent: Corrug board kraftliner	0,118708	0,658	0,006861322	0,0380324
	Paper (recycled)	0,01041666	7 FEFCO&Ecoinvent: Corrug board testliner	0,08437	0,818	0,000878854	0,008520833
	Reinforcement 1 (cotton)	0,0066	Idemat2010 Cotton fabric	2,126	3,288	0,014033366	0,021700705
	Reinforcement 2 (Polyester/latex/polychloroprene)	0,001508	Idemat2010 Polyester fabric*0,50+Idemat2010 natural rubber*0,40+Idemat2010 Polychloroprene*0,10	1,246	4,557	0,001879126	0,006871414
	Polychloroprene	0,003	Idemat2010 Polychloroprene (Neoprene, CR) estimate	1,103	3,704	0,003308163	0,011113008
						Materials production waste	0,095305377

Part	Transport	Kg/pair	1000 Km	Source	Eco-costs/tKm	Carbon footprint/tKm	Eco-costs/a pair	Carbon footprint/ a pair	360/kg/m^3
Leather	Argentina-Pistoia	0,483	14,11	Idemat2010 Container ship (min specific gravity 0,84)	0,005	0,011	0,035448034	0,073026743	Heavy enough
			0,08	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,001392238	0,003688813	
			0,372	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,004315939	0,01143532	Heavy enough
Leather	Pistoia-Civitanova Marche	0,322	0,372	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	7,52328E-05	0,000199333	1,77602368
				Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000125388	0,000332222	Heavy enough
Reinforcement	Macerata-Civitanova Marche	0,04054	0,029	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	4,15077E-05	0,000109977	0,514285714
Yarn	Milano-Civitanova Marche	0,0075	0,464	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,040112027	0,106279051	Heavy enough
Insole	Montegranaro-Civitanova Marche	0,14	0,016	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,00011638	0,000308356	Heavy enough
Outsole	Romania-Civitanova Marche	0,648	1,718	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,000187938	0,000497952	Heavy enough
Packaging: Bag	Teramo-Civitanova Marche	0,034	0,095	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095	0,058370238	0,154655196	2,371479012
Packaging: Shoebox	Montegranaro-Civitanova Marche	0,326	0,016	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095			
Finished product	Civitanova Marche-Bata shops in Italy	1,51804	0,45	Idemat2010 Truck+trailer 24 tons net (min specific gravity 0,32) (tkm)	0,036	0,095			
Total Transport							0,140184922	0,350532962	

Parts	Materials EOL	Kg/pair	Source	Eco-costs/Kg	Carbon footprint/Kg	Eco-costs/a pair	Carbon footprint/ a pair
Product	Leather	0,682	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,075380041	-0,42332327
	Cotton	0,07	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,007736954	-0,043449603
	Polyester	0,01127	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	0,002511815	0,016959801
	Polychloroprene	0,015754	Idemat2010 Polychloroprene (Neoprene, CR) combustion in electrical power plant	0,024	0,276	0,000379237	0,00435121
	Paper	0,558166667	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,061693001	-0,346458854
	Latex	0,003016	Idemat2010 Natural rubber (NR) combustion in electrical power plant	-0,515	-2,891	-0,001552673	-0,008719582
	PVC	0,324	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110	0,756	0,035545094	0,24498156
	Steel	0,014				0	0
EOL post consumer waste						-0,107926523	-0,555658739
Production waste	Leather	0,1028	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,01136227	-0,063808845
	Paper	0,068216667	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,007539846	-0,042342672
	Cotton	0,0066	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111	-0,621	-0,000729484	-0,004096677
	Latex	0,0006032	Idemat2010 Natural rubber (NR) combustion in electrical power plant	-0,515	-2,891	-0,000310535	-0,001743916
	Polyester	0,000754	Idemat2010 Polyester waste incineration with electricity	0,223	1,505	0,000168049	0,001134666
	Polychloroprene	0,0031508	Idemat2010 Polychloroprene (Neoprene, CR) combustion in electrical power plant	0,024	0,276	7,58474E-05	0,000870242
	EOL procuton waste					-0,019698239	-0,109987202

Appendix 5: The 8 advertisements



Advertisement 1

Layout: Green

Benefit: Environment

Heritage: Local

Advertisement 2

Layout: Green

Benefit: Environment

Heritage: Global

Advertisement 3

Layout: Green

Benefit: Personal

Heritage: Local

Advertisement 4

Layout: Green

Benefit: Personal

Heritage: Global

 A revolutionairy Bata shoe In the near future, Bata will introduce a new foot-wear collection. All shoes in this collection are made of 100% natural materials. 100% Natural materials 100% Biodegradable Made of natural materials that protect the environment About Bata: Bata is a leading footwear retailer and manufacturer since 1894. The Bata footwear factory is located in Best (a small village in the south of the Netherlands). Bata cares for the community in which they operate, for example by building houses for Bata employees in a district of Best, which is called Batadorp. Today, Bata serves 1 million customers per day and employs around 50.000 people worldwide. 	 A revolutionairy Bata shoe In the near future, Bata will introduce a new foot-wear collection. All shoes in this collection are made of 100% natural materials. 100% Natural materials 100% Biodegradable Made of natural materials that protect the environment About Bata: Bata is a leading footwear retailer and manufacturer since 1894. The Bata footwear factories are located across 20 countries all over the world. Bata cares for the communities in which they operate, for example by building houses for Bata employees (Batawa in Canada, Bataville in France, Batapur in Pakistan, etc). Today, Bata serves 1 million customers per day and employs around 50.000 people worldwide. 	 A revolutionairy Bata shoe In the near future, Bata will introduce a new foot-wear collection. All shoes in this collection are made of 100% natural materials. 100% Natural materials 100% Natural fit Made of natural materials that protect your foot health About Bata: Bata is a leading footwear retailer and manufacturer since 1894. The Bata footwear factory is located in Best (a small village in the south of the Netherlands). Bata cares for the community in which they operate, for example by building houses for Bata employees in a district of Best, which is called Batadorp. Today, Bata serves 1 million customers per day and employs around 50.000 people worldwide. 	 A revolutionairy Bata shoe In the near future, Bata will introduce a new foot-wear collection. All shoes in this collection are made of 100% natural materials. 100% Natural materials 100% Natural fit Made of natural materials that protect your foot health About Bata: Bata is a leading footwear retailer and manufacturer since 1894. The Bata footwear factories are located across 20 countries all over the world. Bata cares for the communities in which they operate, for example by building houses for Bata employees (Batawa in Canada, Bataville in France, Batapur in Pakistan, etc). Today, Bata serves 1 million customers per day and employs around 50.000 people worldwide. 
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Advertisement 5 Layout: Red Benefit: Environment Heritage: Local	Advertisement 6 Layout: Red Benefit: Environment Heritage: Global	Advertisement 7 Layout: Red Benefit: Personal Heritage: Local	Advertisement 8 Layout: Red Benefit: Personal Heritage: Global
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Appendix 6: Pre-test questionnaire

1. Bata is embedded in the Dutch culture.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

2. Bata is a company of Dutch origin.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

3. Bata has a long history in the Netherlands.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

4. The graphical design of the advertisement emphasizes sustainability.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

5. This graphical design of the advertisement communicates eco-consciousness.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

6. The graphical design of the advertisement is perceived as natural.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

7. The advertisement emphasizes a direct personal benefit for the consumer.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

8. The advertisement claims that the shoe is beneficial for the environment.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

9. The advertisement claims that the shoe is beneficial for the individual consumer.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

10. The advertisements communicates consumer benefits apart from sustainability claims.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

11. Did you know Bata before you received this questionnaire?

yes/ no

Appendix 7: Pre-test results

Layout: Green (13 participants) versus red (11 participants)

	M _{green}	SD _{green}	M _{red}	SD _{red}	M _{green} -M _{red}
The graphical design of the advertisement emphasizes sustainability	4,538462	1,664101	3,8181818	1,721522	0,72028
The graphical design of the advertisement communicates eco-consciousness	5,307692	1,182132	3,4545455	1,634848	1,853147
The graphical design of the advertisement is perceived as natural	4,769231	1,42325	3,1818182	1,834022	1,587413

Benefit: Environmental (12 participants) versus personal (12 participants)

	M _{environment}	SD _{environment}	M _{personal}	SD _{personal}	M _{environment} -M _{personal}
The advertisement emphasizes a direct personal benefit for the consumer	2,333333	0,887625	3,8333333	1,642245	-1,5
The advertisement claims that the shoe is beneficial for the environment	6	0,852803	5,5	1,566699	0,5
The advertisement claims that the shoe is beneficial for the individual consumer	2,25	0,753778	3,5833333	1,729862	-1,33333
The advertisement communicates consumer benefits apart from sustainability claims	2	1,206045	3,0833333	1,311372	-1,08333

Heritage: Local (12 participants) versus global (12 participants)

	M _{local}	SD _{local}	M _{global}	SD _{global}	M _{local} -M _{global}
Bata is embedded in the Dutch culture	2,833333	1,403459	2,6666667	1,556998	0,166667
Bata is a company of Dutch origin	3,833333	1,946247	1,8333333	1,193416	2
Bata has a long history in the Netherlands	4	2	3,25	1,693123	0,75

Appendix 8: Full questionnaire

Q1 up to Q30: Questions that measure the dependent variables

Q31 up to Q39: Control questions

Q40 up to Q51: Question that measure participants profile, preferences and prior knowledge

Q1 Bata is a sustainable company

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q2 Bata cares for the planet

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q3 Sustainability is important for Bata

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q4 Bata is a fair employer

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q5 Human health is important for Bata

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q6 Bata cares for people

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q7 Bata serves the high end market

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q8 Bata is a luxurious brand

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q9 Bata sells expensive shoes

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q10 The Bata brand is authentic

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q11 The Bata brand is fake

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q12 The Bata brand is credible

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q13 The information in the advertisement is trustworthy

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q14 The information in the advertisement is credible

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q15 I believe the information in the advertisement

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q16 Shoes of the new Bata footwear collection are sustainable

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q17 Shoes of the new Bata footwear collection do not harm the environment

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q18 Shoes of the new Bata footwear collection protect the earth

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q19 Shoes of the new Bata footwear collection are healthy for your feet

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q20 Shoes of the new Bata footwear collection prevent sore feet

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q21 Shoes of the new Bata footwear collection are ergonomic

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q22 Shoes of the new Bata footwear collection are durable

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q23 Shoes of the new Bata footwear collection are long-lasting

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q24 Shoes of the new Bata footwear collection are of good quality

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q25 Shoes of the new Bata footwear collection are fashionable

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q26 Shoes of the new Bata footwear collection are cool

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q27 Shoes of the new Bata footwear collection are a "must have"

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q28 I expect that the price of these Bata shoes (in Euro) is:

Open ended

Q29 Please select one of the statements below

- *I will DEFINITELY buy these BATA shoes*
- *I will PROBABLY buy these BATA shoes*
- *I will PROBABLY NOT buy these BATA shoes*
- *I MIGHT buy these BATA shoes*
- *I will DEFINITELY NOT buy these BATA shoes*

Q30 Assuming that you are interested in buying a shoe from the new Bata collection, how many Euros are you willing to spend?

Open ended

Q31 The graphical design of the advertisement emphasizes sustainability

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q32 The graphical design of the advertisement communicates eco-consciousness

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q33 The graphical design of the advertisement looks natural

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q34 The advertisement emphasizes a personal benefit for the consumer

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q35 The advertisement communicates a benefit for the environment

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q36 The advertisement communicates a "benefit for you"

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q37 The advertisement emphasizes foot health

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q38 Bata is a company of Dutch origin

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q39 Bata's local history influences my buying preferences.

Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*

Q40 What is your age?

Open ended

Q41 How many pairs of shoes do you buy in one year? (on average?)

Open ended

Q42 How many Euros do you usually spend on one pair of shoes? (on average?)

Open ended

Q43 Please select how important the following items are when you buy a new pair of shoes:

Price

Very unimportant unimportant indifferent important Very important

Brand

Very unimportant unimportant indifferent important Very important

Sustainability

Very unimportant unimportant indifferent important Very important

Authenticity

Very unimportant unimportant indifferent important Very important

Quality

Very unimportant unimportant indifferent important Very important

Foot health

Very unimportant unimportant indifferent important Very important

Looks

Very unimportant unimportant indifferent important Very important

Q50 Anything else important for you when you buy a new pair of shoes?

Open ended

Q51 Did you know Bata before receiving this questionnaire?

Yes/no

Appendix 9: Explanation research in Dutch (as read by participants)

Beste TPO studenten,

Aan het eind van het Milieu Practicum willen we je aandacht vragen voor een enquête. (Sommigen van jullie hebben het Milieu/DfA practicum eerder doorlopen, maar we zouden het leuk vinden als ook jullie willen meedoen.)

Je hebt een herontwerp gemaakt in het kader van het milieupracticum. Nu is het nog de vraag hoe je jouw product het beste kunt verkopen. Je zou milieu als verkoopargument kunnen gebruiken, maar dat blijkt in de praktijk lang niet altijd succesvol te werken.

Wat beweegt jullie wanneer je iets gaat kopen? We willen een aantal aspecten daarvan met deze enquête meten. Dit gebeurt door jullie een aantal vragen te stellen naar aanleiding van een korte reclame boodschap.

Een maand na het invullen van de enquête krijg je de resultaten ervan toegestuurd. Wij koppelen het volgende aan jullie terug:

- de voorkeuren die er in jullie groep blijken te leven
- de research methode die gevolgd is

Beide aspecten zijn van groot belang voor jullie verdere toekomst: je leert er van wat mensen zoals jullie belangrijk vinden, en je leert ervan hoe je een dergelijk onderzoek kunt aanpakken.

De gegevens zijn anoniem, maar je moet wel jouw naam opgeven, omdat wij anders de resultaten niet kunnen terugkoppelen.

Verder merken we op dat niet iedereen de zelfde reclame-uiting voorgeschoteld krijgt. Dat is een belangrijk element van deze enquête, bij de terugkoppeling krijg je uitgelegd waarom. De enquête gaat over het schoenenmerk Bata, dat op de Nederlandse consumentenmarkt niet verkocht wordt, zodat jullie oordeel niet te veel van te voren beïnvloed is.

Kortom: ga even aan de slag met de volgende weblink, het kost je maar 5-10 minuten en je kunt veel leren van de resultaten die we terugkoppelen.

<http://www.thesis-tools.com/web/?id=258576>

vriendelijke groet,

Appendix 10: SPSS output experiment

In this appendix, the raw SPSS data of the experiment is documented. The data is documented per dependent variable. For each dependent variable, the outcomes of the two-way independent ANOVA test and the descriptive statistics are shown.

1. Evaluation of brand's environmental responsibility

Tests of Between-Subjects Effects					
Index: Evaluation environmental responsibility brand					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5.919 ^a	7	.846	.573	.777
Intercept	4784.498	1	4784.498	3244.739	.000
Heritage1L2G	1.814	1	1.814	1.230	.269
Color1G2R	.181	1	.181	.123	.726
Benefit1Y2N	2.231	1	2.231	1.513	.220
Heritage1L2G * Color1G2R	1.264	1	1.264	.857	.356
Heritage1L2G * Benefit1Y2N	.001	1	.001	.001	.978
Color1G2R * Benefit1Y2N	.166	1	.166	.112	.738
Heritage1L2G * Color1G2R * Benefit1Y2N	.055	1	.055	.038	.847
Error	283.112	192	1.475		
Total	5249.111	200			
Corrected Total	289.031	199			

a. R Squared = .020 (Adjusted R Squared = -.015)

Descriptive Statistics					
Index: Evaluation environmental responsibility brand					
Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.8500	1.08853	40
		Environment	4.7222	1.23032	24
		Total	4.8021	1.13579	64
	red	Consumer	5.1667	1.02312	20
		Environment	4.8533	1.28409	25
		Total	4.9926	1.17312	45
	Total	Consumer	4.9556	1.06911	60
		Environment	4.7891	1.24665	49
		Total	4.8807	1.14981	109
Global	green	Consumer	5.2361	1.00472	24
		Environment	5.0500	1.36487	20
		Total	5.1515	1.17126	44
	red	Consumer	5.1600	1.52486	25
		Environment	4.9242	1.15896	22
		Total	5.0496	1.35664	47
	Total	Consumer	5.1973	1.28366	49
		Environment	4.9841	1.24712	42
		Total	5.0989	1.26442	91
Total	green	Consumer	4.9948	1.06655	64
		Environment	4.8712	1.28842	44
		Total	4.9444	1.15784	108
	red	Consumer	5.1630	1.31161	45
		Environment	4.8865	1.21440	47
		Total	5.0217	1.26356	92
	Total	Consumer	5.0642	1.17105	109
		Environment	4.8791	1.24377	91
		Total	4.9800	1.20516	200

2. Evaluation of brand's social responsibility

Tests of Between-Subjects Effects

Index: Evaluation social responsibility brand

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	20.233 ^a	7	2.890	2.597	.014
Intercept	4220.019	1	4220.019	3791.180	.000
Heritage1L2G	5.656	1	5.656	5.081	.025
Color1G2R	.091	1	.091	.081	.776
Benefit1Y2N	7.601	1	7.601	6.828	.010
Heritage1L2G * Color1G2R	2.442	1	2.442	2.194	.140
Heritage1L2G * Benefit1Y2N	4.356	1	4.356	3.914	.049
Color1G2R * Benefit1Y2N	.226	1	.226	.203	.653
Heritage1L2G * Color1G2R * Benefit1Y2N	.092	1	.092	.083	.774
Error	205.926	185	1.113		
Total	4637.111	193			
Corrected Total	226.159	192			

a. R Squared = .089 (Adjusted R Squared = .055)

Descriptive Statistics

Index: Evaluation social responsibility brand

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.8291	.80158	39
		Environment	4.1389	1.13323	24
		Total	4.5661	.99215	63
	red	Consumer	5.1296	.67774	18
		Environment	4.3889	1.23815	24
		Total	4.7063	1.08999	42
	Total	Consumer	4.9240	.77156	57
		Environment	4.2639	1.18093	48
		Total	4.6222	1.02955	105
Global	green	Consumer	5.0580	1.03305	23
		Environment	5.0741	1.14650	18
		Total	5.0650	1.07036	41
	red	Consumer	4.9867	1.26374	25
		Environment	4.7727	1.08568	22
		Total	4.8865	1.17600	47
	Total	Consumer	5.0208	1.14732	48
		Environment	4.9083	1.10937	40
		Total	4.9697	1.12516	88
Total	green	Consumer	4.9140	.89307	62
		Environment	4.5397	1.21854	42
		Total	4.7628	1.04760	104
	red	Consumer	5.0465	1.05053	43
		Environment	4.5725	1.17097	46
		Total	4.8015	1.13342	89
	Total	Consumer	4.9683	.95801	105
		Environment	4.5568	1.18712	88
		Total	4.7807	1.08532	193

3. Evaluation of brand's quality image

Tests of Between-Subjects Effects					
Index: Evaluation quality image brand					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.851 ^a	7	1.550	1.264	.270
Intercept	2726.633	1	2726.633	2223.150	.000
Heritage1L2G	.044	1	.044	.036	.850
Color1G2R	5.970	1	5.970	4.868	.029
Benefit1Y2N	1.468	1	1.468	1.197	.275
Heritage1L2G * Color1G2R	2.630	1	2.630	2.145	.145
Heritage1L2G * Benefit1Y2N	.066	1	.066	.054	.817
Color1G2R * Benefit1Y2N	.317	1	.317	.258	.612
Heritage1L2G * Color1G2R * Benefit1Y2N	.111	1	.111	.091	.764
Error	231.803	189	1.226		
Total	3055.000	197			
Corrected Total	242.654	196			

a. R Squared = .045 (Adjusted R Squared = .009)

Descriptive Statistics					
Index: Evaluation quality image brand					
Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	3.5750	.99568	40
		Environment	3.4028	1.07217	24
		Total	3.5104	1.02003	64
	red	Consumer	4.1333	1.35249	20
		Environment	4.0278	1.21551	24
		Total	4.0758	1.26545	44
	Total	Consumer	3.7611	1.14667	60
		Environment	3.7153	1.17698	48
		Total	3.7407	1.15500	108
Global	green	Consumer	3.9275	.95323	23
		Environment	3.5833	1.05340	20
		Total	3.7674	1.00405	43
	red	Consumer	3.9167	1.19682	24
		Environment	3.8333	1.06781	22
		Total	3.8768	1.12515	46
	Total	Consumer	3.9220	1.07275	47
		Environment	3.7143	1.05556	42
		Total	3.8240	1.06374	89
Total	green	Consumer	3.7037	.98758	63
		Environment	3.4848	1.05521	44
		Total	3.6137	1.01679	107
	red	Consumer	4.0152	1.25950	44
		Environment	3.9348	1.13881	46
		Total	3.9741	1.19323	90
	Total	Consumer	3.8318	1.11251	107
		Environment	3.7148	1.11573	90
		Total	3.7783	1.11267	197

4. Evaluation of brand's authenticity

Tests of Between-Subjects Effects

Index: Evaluation authenticity brand

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.995 ^a	7	1.142	1.042	.403
Intercept	3396.361	1	3396.361	3099.038	.000
Heritage1L2G	.928	1	.928	.846	.359
Color1G2R	.734	1	.734	.670	.414
Benefit1Y2N	2.556	1	2.556	2.332	.128
Heritage1L2G * Color1G2R	1.105	1	1.105	1.008	.317
Heritage1L2G * Benefit1Y2N	.265	1	.265	.242	.623
Color1G2R * Benefit1Y2N	.005	1	.005	.004	.948
Heritage1L2G * Color1G2R * Benefit1Y2N	2.529	1	2.529	2.308	.130
Error	202.749	185	1.096		
Total	3743.000	193			
Corrected Total	210.744	192			

a. R Squared = .038 (Adjusted R Squared = .002)

Descriptive Statistics

Index: Evaluation authenticity brand

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.1880	1.24908	39
		Environment	4.2727	1.05728	22
		Total	4.2186	1.17518	61
	red	Consumer	4.4035	.90662	19
		Environment	4.0000	1.08866	25
		Total	4.1742	1.02296	44
	Total	Consumer	4.2586	1.14460	58
		Environment	4.1277	1.07126	47
		Total	4.2000	1.10902	105
Global	green	Consumer	4.4848	1.06273	22
		Environment	3.9500	.91303	20
		Total	4.2302	1.01876	42
	red	Consumer	4.5417	.96215	24
		Environment	4.4545	.87011	22
		Total	4.5000	.91016	46
	Total	Consumer	4.5145	1.00051	46
		Environment	4.2143	.91605	42
		Total	4.3712	.96745	88
Total	green	Consumer	4.2951	1.18493	61
		Environment	4.1190	.99271	42
		Total	4.2233	1.10888	103
	red	Consumer	4.4806	.92953	43
		Environment	4.2128	1.00824	47
		Total	4.3407	.97532	90
	Total	Consumer	4.3718	1.08566	104
		Environment	4.1685	.99636	89
		Total	4.2781	1.04768	193

5. Evaluation of brand's trustworthiness

Tests of Between-Subjects Effects					
Index: Evaluation trustworthiness brand					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.580 ^a	7	.654	.451	.869
Intercept	2915.760	1	2915.760	2008.031	.000
Heritage1L2G	.612	1	.612	.421	.517
Color1G2R	.022	1	.022	.015	.902
Benefit1Y2N	1.091	1	1.091	.751	.387
Heritage1L2G * Color1G2R	.134	1	.134	.092	.762
Heritage1L2G *	1.716	1	1.716	1.182	.278
Benefit1Y2N					
Color1G2R * Benefit1Y2N	.999	1	.999	.688	.408
Heritage1L2G * Color1G2R	.446	1	.446	.307	.580
* Benefit1Y2N					
Error	275.889	190	1.452		
Total	3332.222	198			
Corrected Total	280.469	197			

a. R Squared = .016 (Adjusted R Squared = -.020)

Descriptive Statistics					
Index: Evaluation trustworthiness brand					
Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	3.9402	1.23039	39
		Environment	3.9306	1.30024	24
		Total	3.9365	1.24701	63
	red	Consumer	3.9667	1.14912	20
		Environment	4.0533	1.18509	25
		Total	4.0148	1.15679	45
	Total	Consumer	3.9492	1.19355	59
		Environment	3.9932	1.23132	49
		Total	3.9691	1.20533	108
Global	green	Consumer	4.1667	1.26262	24
		Environment	3.5833	1.29269	20
		Total	3.9015	1.29515	44
	red	Consumer	3.8933	1.09595	25
		Environment	3.7937	1.08257	21
		Total	3.8478	1.07888	46
	Total	Consumer	4.0272	1.17622	49
		Environment	3.6911	1.17943	41
		Total	3.8741	1.18309	90
Total	green	Consumer	4.0265	1.23756	63
		Environment	3.7727	1.29354	44
		Total	3.9221	1.26108	107
	red	Consumer	3.9259	1.10757	45
		Environment	3.9348	1.13446	46
		Total	3.9304	1.11501	91
	Total	Consumer	3.9846	1.18083	108
		Environment	3.8556	1.21070	90
		Total	3.9259	1.19319	198

6. Evaluation of product's sustainability

Tests of Between-Subjects Effects

Index: Evaluation sustainability product

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8.132 ^a	7	1.162	.999	.434
Intercept	3371.024	1	3371.024	2898.158	.000
Heritage1L2G	.007	1	.007	.006	.938
Color1G2R	.954	1	.954	.820	.366
Benefit1Y2N	1.855	1	1.855	1.595	.208
Heritage1L2G * Color1G2R	2.455	1	2.455	2.110	.148
Heritage1L2G *	.175	1	.175	.151	.698
Benefit1Y2N					
Color1G2R * Benefit1Y2N	2.165	1	2.165	1.861	.174
Heritage1L2G * Color1G2R * Benefit1Y2N	.519	1	.519	.446	.505
Error	219.837	189	1.163		
Total	3755.889	197			
Corrected Total	227.970	196			

a. R Squared = .036 (Adjusted R Squared = .000)

Descriptive Statistics

Index: Evaluation sustainability product

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.2833	1.05288	40
		Environment	4.1014	1.13900	23
		Total	4.2169	1.07956	63
	red	Consumer	4.0500	.88704	20
		Environment	4.5067	1.05900	25
		Total	4.3037	1.00207	45
	Total	Consumer	4.2056	.99923	60
		Environment	4.3125	1.10534	48
		Total	4.2531	1.04407	108
Global	green	Consumer	4.3333	1.02986	23
		Environment	4.4833	1.31334	20
		Total	4.4031	1.15826	43
	red	Consumer	3.8533	1.07186	25
		Environment	4.2222	1.06110	21
		Total	4.0217	1.07129	46
	Total	Consumer	4.0833	1.06857	48
		Environment	4.3496	1.18310	41
		Total	4.2060	1.12423	89
Total	green	Consumer	4.3016	1.03646	63
		Environment	4.2791	1.22351	43
		Total	4.2925	1.11051	106
	red	Consumer	3.9407	.98803	45
		Environment	4.3768	1.05785	46
		Total	4.1612	1.04156	91
	Total	Consumer	4.1512	1.02754	108
		Environment	4.3296	1.13540	89
		Total	4.2318	1.07848	197

7. Evaluation of product's healthiness

Tests of Between-Subjects Effects

Index: Evaluation healthiness product

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	93.789 ^a	7	13.398	11.244	.000
Intercept	2725.264	1	2725.264	2287.090	.000
Heritage1L2G	.107	1	.107	.090	.764
Color1G2R	.155	1	.155	.130	.719
Benefit1Y2N	79.518	1	79.518	66.733	.000
Heritage1L2G * Color1G2R	6.539	1	6.539	5.487	.020
Heritage1L2G * Benefit1Y2N	1.277	1	1.277	1.072	.302
Color1G2R * Benefit1Y2N	4.405	1	4.405	3.697	.056
Heritage1L2G * Color1G2R * Benefit1Y2N	1.128	1	1.128	.947	.332
Error	224.018	188	1.192		
Total	3228.667	196			
Corrected Total	317.807	195			

a. R Squared = .295 (Adjusted R Squared = .269)

Descriptive Statistics

Index: Evaluation healthiness product

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.4211	1.00355	38
		Environment	2.8056	1.21551	24
		Total	3.7957	1.34063	62
	red	Consumer	4.7000	.93596	20
		Environment	3.3867	1.12908	25
		Total	3.9704	1.22850	45
	Total	Consumer	4.5172	.98165	58
		Environment	3.1020	1.19645	49
		Total	3.8692	1.29161	107
Global	green	Consumer	4.7361	.98284	24
		Environment	3.1404	1.28772	19
		Total	4.0310	1.37208	43
	red	Consumer	3.9600	1.19923	25
		Environment	3.2857	.97346	21
		Total	3.6522	1.14170	46
	Total	Consumer	4.3401	1.15568	49
		Environment	3.2167	1.12102	40
		Total	3.8352	1.26543	89
Total	green	Consumer	4.5430	.99952	62
		Environment	2.9535	1.24421	43
		Total	3.8921	1.35203	105
	red	Consumer	4.2889	1.14062	45
		Environment	3.3406	1.05055	46
		Total	3.8095	1.18961	91
	Total	Consumer	4.4361	1.06341	107
		Environment	3.1536	1.15804	89
		Total	3.8537	1.27663	196

8. Evaluation of product's durability

Tests of Between-Subjects Effects

Index: Evaluation durability product

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11.081 ^a	7	1.583	1.527	.160
Intercept	3027.836	1	3027.836	2920.577	.000
Heritage1L2G	1.204	1	1.204	1.161	.283
Color1G2R	2.372	1	2.372	2.288	.132
Benefit1Y2N	6.108	1	6.108	5.892	.016
Heritage1L2G * Color1G2R	.003	1	.003	.003	.960
Heritage1L2G * Benefit1Y2N	1.133	1	1.133	1.093	.297
Color1G2R * Benefit1Y2N	1.292	1	1.292	1.246	.266
Heritage1L2G * Color1G2R * Benefit1Y2N	.604	1	.604	.582	.446
Error	193.868	187	1.037		
Total	3394.667	195			
Corrected Total	204.948	194			

a. R Squared = .054 (Adjusted R Squared = .019)

Descriptive Statistics

Index: Evaluation durability product

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	4.1197	1.04150	39
		Environment	3.8611	1.29255	24
		Total	4.0212	1.14045	63
	red	Consumer	4.3000	1.00815	20
		Environment	4.1467	1.08474	25
		Total	4.2148	1.04242	45
	Total	Consumer	4.1808	1.02520	59
		Environment	4.0068	1.18730	49
		Total	4.1019	1.09985	108
Global	green	Consumer	4.2361	.87078	24
		Environment	3.4386	1.08328	19
		Total	3.8837	1.03863	43
	red	Consumer	4.1739	.64251	23
		Environment	3.9365	.97536	21
		Total	4.0606	.81736	44
	Total	Consumer	4.2057	.75997	47
		Environment	3.7000	1.04541	40
		Total	3.9732	.93208	87
Total	green	Consumer	4.1640	.97435	63
		Environment	3.6744	1.20950	43
		Total	3.9654	1.09731	106
	red	Consumer	4.2326	.82467	43
		Environment	4.0507	1.03032	46
		Total	4.1386	.93583	89
	Total	Consumer	4.1918	.91310	106
		Environment	3.8689	1.12996	89
		Total	4.0444	1.02783	195

9. Evaluation of product's fashion image

Tests of Between-Subjects Effects

Index: Evaluation fashion image product

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15.241 ^a	7	2.177	1.737	.103
Intercept	1984.779	1	1984.779	1583.765	.000
Heritage1L2G	1.280	1	1.280	1.021	.313
Color1G2R	2.570	1	2.570	2.051	.154
Benefit1Y2N	7.748	1	7.748	6.182	.014
Heritage1L2G * Color1G2R	3.256E-6	1	3.256E-6	.000	.999
Heritage1L2G * Benefit1Y2N	.252	1	.252	.201	.654
Color1G2R * Benefit1Y2N	1.399	1	1.399	1.116	.292
Heritage1L2G * Color1G2R * Benefit1Y2N	1.175	1	1.175	.938	.334
Error	233.096	186	1.253		
Total	2350.889	194			
Corrected Total	248.337	193			

a. R Squared = .061 (Adjusted R Squared = .026)

Descriptive Statistics

Index: Evaluation fashion image product

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	3.4833	1.15458	40
		Environment	2.6667	1.15051	24
		Total	3.1771	1.21131	64
	red	Consumer	3.3860	1.25346	19
		Environment	3.2361	1.07891	24
		Total	3.3023	1.14738	43
	Total	Consumer	3.4520	1.17731	59
		Environment	2.9514	1.14026	48
		Total	3.2274	1.18215	107
Global	green	Consumer	3.4167	.89685	24
		Environment	3.0667	.82078	20
		Total	3.2576	.87120	44
	red	Consumer	3.6377	1.00460	23
		Environment	3.3167	1.48865	20
		Total	3.4884	1.24796	43
	Total	Consumer	3.5248	.94727	47
		Environment	3.1917	1.19326	40
		Total	3.3716	1.07404	87
Total	green	Consumer	3.4583	1.05827	64
		Environment	2.8485	1.02288	44
		Total	3.2099	1.08189	108
	red	Consumer	3.5238	1.11686	42
		Environment	3.2727	1.26628	44
		Total	3.3953	1.19532	86
Total	Total	Consumer	3.4843	1.07706	106
		Environment	3.0606	1.16411	88
		Total	3.2921	1.13434	194

10. Buying intention

Tests of Between-Subjects Effects					
Buying intention (reverse of question)					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9.160 ^a	7	1.309	2.199	.036
Intercept	989.109	1	989.109	1662.413	.000
Heritage1L2G	.194	1	.194	.327	.568
Color1G2R	.351	1	.351	.590	.443
Benefit1Y2N	2.090	1	2.090	3.513	.062
Heritage1L2G * Color1G2R	.033	1	.033	.056	.813
Heritage1L2G * Benefit1Y2N	1.277	1	1.277	2.146	.145
Color1G2R * Benefit1Y2N	5.095	1	5.095	8.564	.004
Heritage1L2G * Color1G2R * Benefit1Y2N	.170	1	.170	.286	.594
Error	113.047	190	.595		
Total	1177.000	198			
Corrected Total	122.207	197			

a. R Squared = .075 (Adjusted R Squared = .041)

Descriptive Statistics					
Buying intention (reverse of question)					
Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	2.4750	.81610	40
		Environment	2.0417	.62409	24
		Total	2.3125	.77408	64
	red	Consumer	2.2000	.89443	20
		Environment	2.5417	.77903	24
		Total	2.3864	.84126	44
	Total	Consumer	2.3833	.84556	60
		Environment	2.2917	.74258	48
		Total	2.3426	.79909	108
Global	green	Consumer	2.5417	.58823	24
		Environment	1.9000	.64072	20
		Total	2.2500	.68624	44
	red	Consumer	2.3333	.96309	24
		Environment	2.2273	.75162	22
		Total	2.2826	.86057	46
	Total	Consumer	2.4375	.79643	48
		Environment	2.0714	.71202	42
		Total	2.2667	.77605	90
Total	green	Consumer	2.5000	.73463	64
		Environment	1.9773	.62835	44
		Total	2.2870	.73689	108
	red	Consumer	2.2727	.92419	44
		Environment	2.3913	.77397	46
		Total	2.3333	.84800	90
	Total	Consumer	2.4074	.82072	108
		Environment	2.1889	.73277	90
		Total	2.3081	.78762	198

11. Willingness to pay

Tests of Between-Subjects Effects

Willingness to pay (relative)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.182 ^a	7	.455	1.219	.295
Intercept	150.606	1	150.606	404.030	.000
Heritage1L2G	.026	1	.026	.070	.792
Color1G2R	.113	1	.113	.304	.582
Benefit1Y2N	.555	1	.555	1.489	.224
Heritage1L2G * Color1G2R	.088	1	.088	.236	.628
Heritage1L2G * Benefit1Y2N	2.415	1	2.415	6.478	.012
Color1G2R * Benefit1Y2N	.064	1	.064	.173	.678
Heritage1L2G * Color1G2R * Benefit1Y2N	.002	1	.002	.005	.944
Error	62.624	168	.373		
Total	224.426	176			
Corrected Total	65.805	175			

a. R Squared = .048 (Adjusted R Squared = .009)

Descriptive Statistics

Willingness to pay (relative)

Heritage1L2G	Color1G2R	Benefit1Y2N	Mean	Std. Deviation	N
Local	green	Consumer	.8843	.43212	33
		Environment	.9766	.42838	21
		Total	.9202	.42901	54
	red	Consumer	.8581	.21428	15
		Environment	1.0152	.43842	25
		Total	.9563	.37511	40
	Total	Consumer	.8761	.37545	48
		Environment	.9976	.42948	46
		Total	.9356	.40524	94
Global	green	Consumer	1.1098	.65501	20
		Environment	.7096	.36313	19
		Total	.9148	.56396	39
	red	Consumer	1.1615	1.22379	22
		Environment	.8529	.53601	21
		Total	1.0108	.95394	43
	Total	Consumer	1.1369	.98316	42
		Environment	.7848	.46201	40
		Total	.9652	.78955	82
Total	green	Consumer	.9694	.53277	53
		Environment	.8498	.41618	40
		Total	.9179	.48724	93
	red	Consumer	1.0385	.95619	37
		Environment	.9411	.48671	46
		Total	.9845	.73060	83
	Total	Consumer	.9978	.73270	90
		Environment	.8986	.45495	86
		Total	.9493	.61321	176

Appendix 11: Ergonomics

Ergonomics is essential for shoe design. People walk approximately 10.000 to 17.000 steps a day and 40% of the Dutch population has foot problems¹. Some brands explicitly promote the ergonomic characteristics of their shoes. Examples are Pedro², Ara³, Durea⁴ and Solidus⁵. These four brands have a slightly different opinion about shoe ergonomics, but the basics remain the same: a conventional ergonomic shoe has a high and small heel counter (1), has a removable insole (2), has sufficient space for toes (3) and is available in different length and width sizes (4). (see Figure 1). For boots: also different calve sizes. Besides, a conventional ergonomic shoe makes use of materials that are breathable and can shape around the foot. An ergonomic insole supports the foot in four areas: metatarsals(1), fore foot(2), shank(3) and heel(4) (See figure 2).

Ergonomic shoe

1. High heel edge (prevents slippage of the foot and increases stability)
2. Removable insole (possibility to use adjusted insoles)
3. Sufficient space for toes
4. Various width sizes (complementing length sizes)

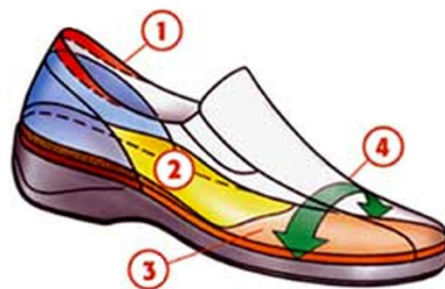


Figure 1: basic ergonomic requirements shoe

Ergonomic insole

1. Fore foot bed (supporting metatarsals)
2. Fore foot support
3. Shank support
4. Heel Cushioning



Figure 2: basic ergonomic requirements insole

¹ Podologisch intrituut: <http://www.podologisch.nl/index.html>

² Pedro: <http://www.piedro.com>

³ Ara shoes: <http://www.ara-shoes.de/index.php?id=352>

⁴ Durea shoes: <http://www.durea.com>

⁵ Solidus: <http://www.solidus.be>

Apart from the basic ergonomic requirements, brands advertise new techniques that support foot ergonomics. Examples are:

1. Small capsules in the outsole press together during the touchdown of the foot. As a result, air is transported by the midsole and insole⁶ (see Figure 3).
2. Beads that are placed in the insole. These beads should massage the foot which improves blood circulation and refreshes the feet⁶ (see Figure 4).
3. Soles that support the natural rolling movement of the foot. These soles contain a length stabilizer as well as a lateral stabilizer⁷ (see Figure 5).



Figure 3: Active air technique
(Clarks)



Figure 4: Beads in
insole (Clarks)



Figure 5: Rollingsoft technique
(Gabor)

⁶ www.clarks.com

⁷ www.gabor.de

Appendix 12: Market developments

An inventory of market developments, either thorough or “quick and dirty”, is an indispensable part of a design project. For this study, the analysis of the market developments is limited to the sustainable programs and initiatives of competing brands. The analysis of market developments has two goals:

- (1) Mapping general trends with regard to sustainable shoe design in Europe.
- (2) Mapping general trends with regard to the communication of sustainable values in Europe.

The results are not complete but provide a sufficient overview of sustainable shoe design and the communication of these sustainable claims in the current market.

Method

BATA provided a list of shoe brands which contains 24 brand names (see Figure 1). Apart from this list, a couple of additional brands are analyzed because of recent press releases on their environmental programs: Nike, Simple shoes and OAT shoes. This means that the sustainability programs of 28 brands are shortly studied. In addition, a document regarding sustainable shoe developments (University of Zlín) is consulted.

- Aldo
- Camper
- Clark
- Birkenstock
- Dinsko
- Eco
- Bata
- Nilson
- Foreva
- Gabor
- Geox
- Hush Puppies
- Kickers
- Mefisto
- Merrel
- Naturalista
- Panama Jack
- Pikolinos
- Scholl
- Timberland
- Todds (more high end)
- Pomarfin
- Vagabond
- Wonders

Figure 1: Shoe brands Europe (used in the comparative study for leather shoes sustainability by test Achat /Belgium)

Findings

Established brands versus new entrants

Established brands tend to focus on efficiency and reduction, while new entrants mainly focus on "one issue". For example, Nike introduced a line that is called "Considered Design". The Huarache 09 is an example of a Nike Considered Design shoe (see Figure 2). This shoe is made out of "environmentally preferred materials" and "a smarter pattern design allowed for a cutting efficiency of 70 percent on the upper, substantially reducing waste"⁸. The essence of the sustainable design is that it replaces unsustainable materials and reduces waste. Timberland communicates sustainable claims by means of extended graphs that show the goals and progress of the company⁹ (see Figure 3). Their goals focus on the reduction of hazardous emissions and unsustainable materials. New entrants tend to focus on one issue. Simple shoes for example (see Figure 4), focuses on certified and recycled materials and OAT shoes focuses on the biodegradability issue¹⁰ (see Figure 5).



Figure 2: Nike's Huarache 09

⁸www.nikebiz.com

⁹earthkeepers.timberland.com

¹⁰www.simpleshoes.com

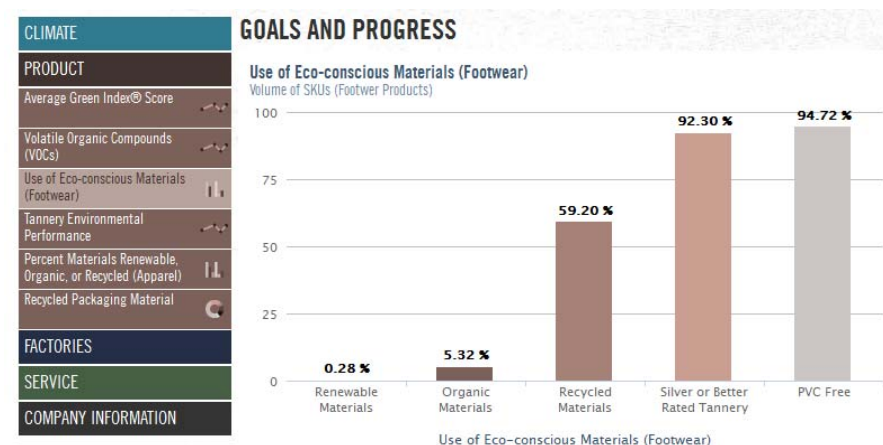


Figure 3: Timberland's communication of environmental goals and progress



Figure 4: Simple shoes



Figure 5: biodegradable OAT shoes

Rational communication versus emotional communication

Nike communicates sustainable progress by means of Nike's "North Star"¹¹ (see Figure 6) and a lot of movies. In these movies, the management extensively explains the sustainability of Nike's design's. Timberland also communicates extensive information on their targets¹² (already shown in Figure 3). Information about a specific part of a shoe from the sustainable Earthkeepers® line (see Figure 7) is displayed as soon as "the mouse is moved". This type of information is more interactive than Nike's North star, but still very extensive and aimed at providing as much information as possible.

¹¹ www.nikebiz.com

¹² earthkeepers.timberland.com



Figure 6: Nike's Northstar

El Naturalista communicates their sustainable vision in a more emotional way¹³ (see Figure 8). No graphs, targets and technical information. Instead, their website shows moving grass, trees and air. Besides, the website produces the sound of birds and wind. Their homepage starts with the phrase: "Products, Planet, People, Buy". Moving your mouse changes images and sounds. OAT shoes also communicates very visual by means of a tree in a shoe¹⁴ (see Figure 5). Besides, OAT shoes focuses on the story around the shoe. Compared to El Naturalista, the communication of OAT shoes is focused on "cool" instead of "natural", but the communication tactics of both brands are similar: emotional instead of rational.

¹³ www.elnaturalista.com

¹⁴ www.oatshoes.com



Figure 7: Timberland's communication of sustainable product characteristics



Figure 8: Homepage El Naturalista



Figure 9: Patagonia shoe: Design for disassembly

Design for disassembly and cradle to cradle design

Design for disassembly, whether or not in combination with cradle to cradle design, is mentioned several times by different brands. Camper for example, introduced a cradle-to-cradle shoe that can be disassembled very easy by the consumer: the parts are not glued or stitched together¹⁵ (see Figure 10). Camper claims that the plastic part can be recycled endlessly and that the organic insole, which is made primarily from coconut shells, is 100% biodegradable. Patagonia¹⁶ also designed a glue less shoe that can be disassembled (see Figure 9). Timberland applies cradle-to-cradle on a larger scale: their Earthkeepers® line can be disassembled and partly recycled¹⁷. Besides,



Figure 10: Camper shoe: Design for disassembly

¹⁵ www.camper.com/en

¹⁶ Sustainable shoe: a concept of making shoes that should comprehend, University of Zlín, 2010

¹⁷ earthkeepers.timberland.com

Timberland makes an effort to get their shoes back from consumers. In general, cradle-to-cradle design and design for disassembly are introduced by a couple of brands in the shoe industry.

Heritage and honesty

Established brands are eager to communicate that sustainability has always been a part of their corporate values, either by their heritage or the products they design. Birkenstock for example claims that:

“We’re not a newcomer or just jumping on the “green” bandwagon because it is popular. Our 230 year heritage as shoemakers reflect an environmental sensibility that continues to evolve and shape who we are as a brand and as a company.”¹⁸

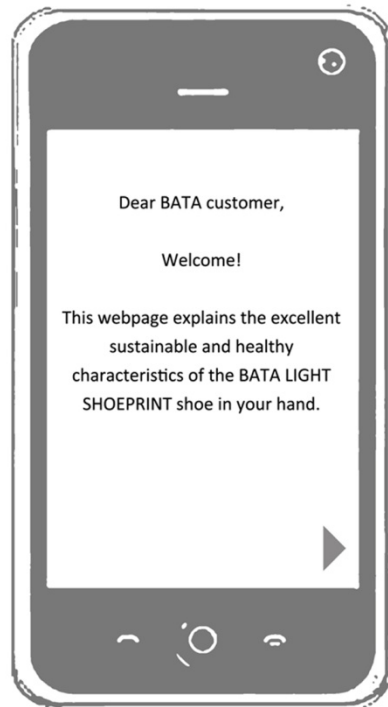
At the same time, brands are not reluctant to admit shortcomings. For example, Timberland admits that

“While we’re not where we want to be yet, every season our designers and value chain team get closer”¹⁹

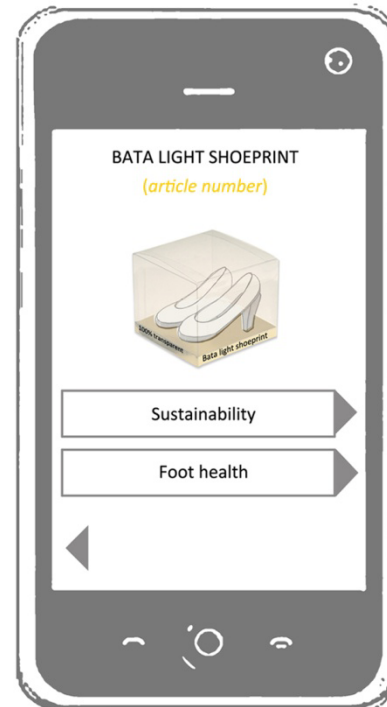
¹⁸ www.birkenstock.de

¹⁹ earthkeepers.timberland.com

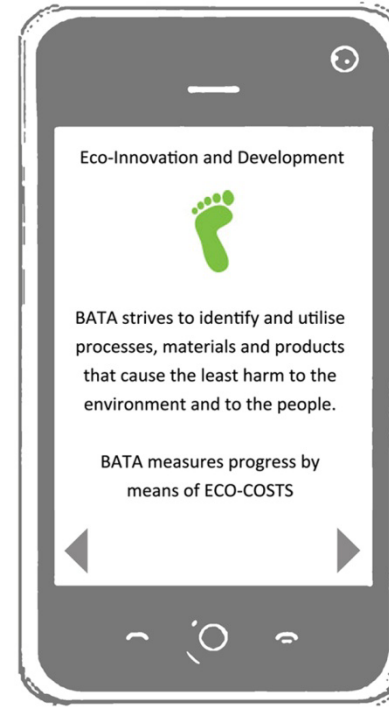
Appendix 13: Enlarged version of example screens concept 1



Level 1: Welcome



Level 2: Introduce the shoe



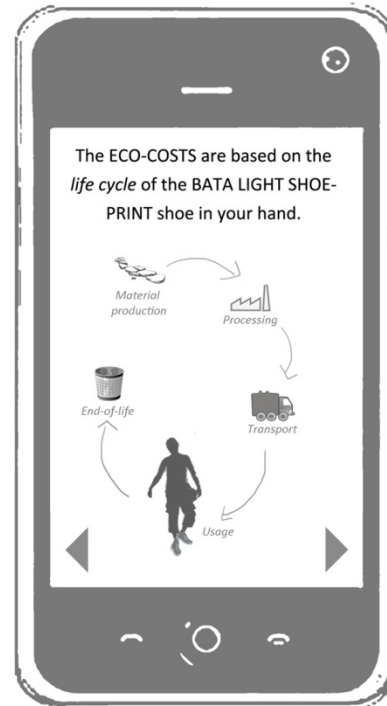
Level 3: Introduce Eco-innovation and development



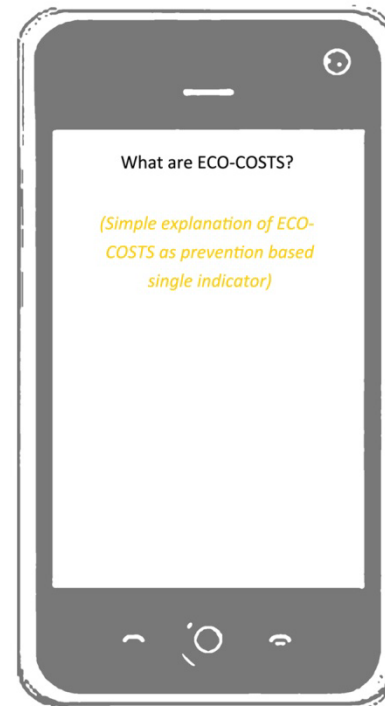
Level 3: Introduce ergonomic development



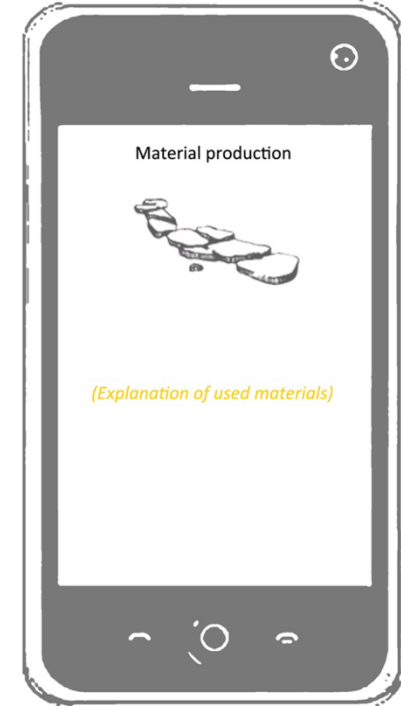
Level 4: Show Eco-costs



Level 5: Show in-dept information Eco-costs

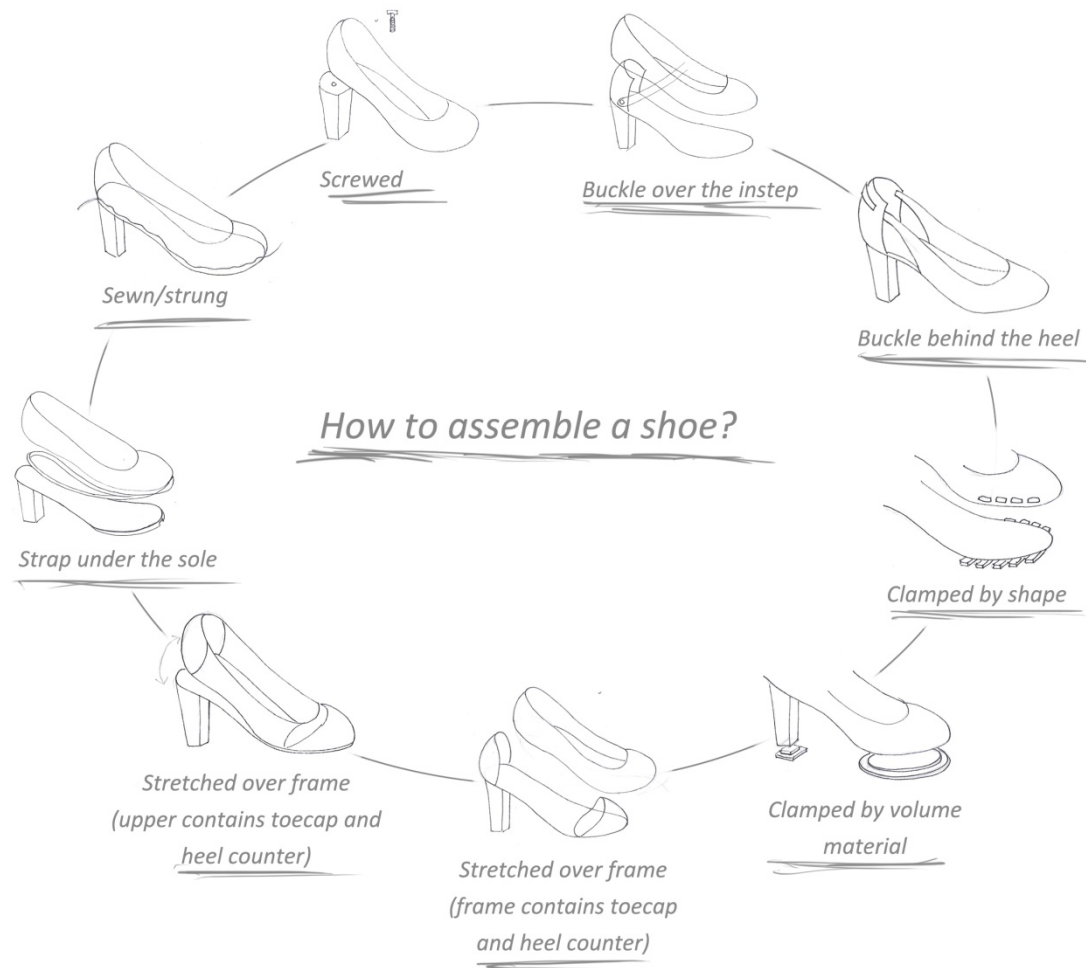


Level 6: Show in-dept information Eco-costs



Level 7: Show in-dept information Eco-costs

Appendix 14: Ideas construction modular dress shoes



Appendix 15: Calculation concept evaluation

The concepts are evaluated on Eco-costs²⁰ (material production phase+ end-of-life phase) and material costs²¹. Both the Eco-costs and the material costs are calculated for the benchmark, for concept 1 and concept 2. The Eco-costs are calculated volume based and weight based. Weight based means that the weight of the materials chosen for the benchmark is directly translated to the concepts. For example: The PVC outsole of the benchmark weighs 0,35 Kg. Consequently, the outsole of concept 1 is estimated 0,35 Kg natural rubber. Volume based means that the weight of the materials chosen for the benchmark is converted to volume. For example: The PVC outsole of the benchmark weighs 0,35 Kg. Consequently, the natural rubber outsole of concept 1 weighs 0,23 Kg based on the volume of the outsole and the specific gravity of PVC and natural rubber. Volume based calculations are assumed more accurate than weight based calculations.

²⁰ Eco-costs are calculated according to the Idemat data 2010

²¹ Material costs are calculated according to the Cambridge Engineering selector data 2011

Benchmark

Part	Benchmark material	Bechmark weight (Kg)	Bechmark volume (m^3)	Benchmark material costs (Euro)	Benchmark Eco-costs materials (Euro)	Benchmark Eco-costs EOL (Euro)
Upper	Leather	0,32	0,000355556	4,16	0,213	-0,035
Toecap	Polychloroprene	0,02	2,85714E-05	0,334285714	0,022054422	0,002316093
Counter	Leather	0,04	4,44444E-05	0,52	0,026593208	-0,004421117
Insole	50% Leather	0,07	7,77778E-05	0,91	0,046538115	-0,007736954
Insole 2	50% Paper	0,07	0,0001	0,049	0,00588	-0,007736954
Filler	50% Polyester	0,025	0,014705882	0,075	0,054831625	0,005571906
Filler 2	50% Cotton	0,025	0,014705882	0,075	0,053156688	-0,002763198
Shank	Steel	0,05	7,14286E-06	0,03	0,024685901	0
Outsole	PVC	0,35	0,00025	0,35	0,227728564	0,038397478
Heel	Leather	0,3	0,000333333	3,9	0,199449063	-0,033158376
Connections	Glue	0,03		0,02	0,02850426	Not counted
Packaging	Cardboard	0,3		0,21	0,0252	-0,033158376
				Material costs:		
				10,63328571	0,927	-0,078
				Total Eco-costs: 0,849		

Concept 1

Concept 1 material	Concept 1 weight	Concept 1 material costs	Concept 1 Eco/costs materials (volume based)	Concept 1 EOL (volume based)	Concept 1 Eco-costs (weight based)	Concept 1 EOL (weight based)
Leather	0,32	4,16	0,213	-0,035	0,212745667	-0,035368934
Leather	0,025714286	0,334285714	0,017095634	-0,002842147	0,013296604	-0,002210558
Leather	0,04	0,52	0,026593208	-0,004421117	0,026593208	-0,004421117
Cork	0,015555556	0,077777778	0,000608141	-0,003769639	0,002736634	-0,016963375
Cork	0,02	0,1	0,000781896	-0,004846679	0,002736634	-0,016963375
Latex	0,025	0,0675	0,002442212	-0,007077924	0,002442212	-0,007077924
Latex	0,025	0,0675	0,002442212	-0,007077924	0,002442212	-0,007077924

Bamboo	0,05	0,075	0,01735536	-0,012116697	0,01735536	-0,012116697
Latex	0,23	0,621	0,022468346	-0,065116901	0,034190961	-0,099090936
Wood	0,316666667	0,158333333	0,012354116	-0,076739078	0,199449063	-0,084935088
Glue	0,03	0,02	0,02850426		0,02850426	Not counted
PLA	0,15	0,27	0,100382382	-0,03422228	0,100382382	-0,03422228
		Material costs:				
		6,471396825	0,444	-0,254	0,642875198	-0,320448208
				Total Eco-costs volume based: 0,190		Total Eco-costs weight based: 0,32242699

Concept 2

Concept 2 material	Concept 2 weight	Concept 2 material costs	Concept 2 Eco-costs (volume)	Concept 2 EOL (volume based)	Concept 2 Eco-costs (weight)	Concept 2 EOL (weight based)
Leather	0,32	4,16	0,213	-0,035	0,212745667	-0,035368934
Leather	0,025714286	0,334285714	0,017095634	-0,002842147	0,013296604	-0,002210558
Leather	0,04	0,52	0,026593208	-0,004421117	0,026593208	-0,004421117
Cork	0,015555556	0,077777778	0,000608141	-0,003769639	0,002736634	-0,016963375
Cork	0,02	0,1	0,000781896	-0,004846679	0,002736634	-0,016963375
Latex	0,025	0,0675	0,002442212	-0,007077924	0,002442212	-0,007077924
Latex	0,025	0,0675	0,002442212	-0,007077924	0,002442212	-0,007077924
Bamboo	0,05	0,075	0,01735536	-0,012116697	0,01735536	-0,012116697
PVC recycled	0,35	0,35	0,076273516	0	0,076273516	0
Wood	0,316666667	0,158333333	0,012354116	-0,076739078	0,199449063	-0,084935088
Steel	0,09	0,054	0,044434621	0	0,044434621	0
		Material costs:				
		5,964396825	0,413	-0,154	0,600505731	-0,187134992
				Total Eco-costs volume based: 0,259		Total Eco-costs weight based: 0,413370738

Used data

Material	Data material production	Eco-costs
Cork	Idemat2010 Cork at factory gate in Portugal	0,039
Latex	Idemat2010 Natural rubber	0,098
PVC(virgin)	Idemat2010 PVC	0,651
Leather	Idemat2010 Leather	0,665
Paper	FEFCO&Ecoinvent Testliner	0,084
PLA	Idemat2010 Polylactide (PLA, starch based biodegradable plastic)	0,669
Polychloroprene	Idemat2010 Polychloroprene (Neoprene, CR) estimate	1,103
Bamboo	Idemat2010 Plywood Bamboo (density approx 700 kg/m ³)	0,347
Glue	Idemat2010 MF (resin)	0,950
Wood	Idemat2010 Oak, European	0,039
Polyester	Idemat2010 Polyester fabric	2,193
Cotton	Idemat2010 Cotton fabric	2,126
Steel	Idemat2010 Steel (21% secondary = market mix average)	0,494
PVC (recycled)	Idemat2010 PVC, recycled (estimate)	0,218

Materials	Data EOL	Eco-costs EOL
Leather Paper, Cotton	Idemat2010 Paper, Cardboard, Leather, (12%MC) waste incineration with electricity	-0,111
Polychloroprene	Idemat2010 Polychloroprene (Neoprene, CR) waste incineration with electricity	0,116
PVC	Idemat2010 Polyvinylchloride (tpPVC) waste incineration with electricity	0,110
Bamboo, Cork, Wood	Idemat2010 Hardwood 0% MC, Bamboo, Cork, combustion in electrical power plant	-0,242
Latex	Idemat2010 Natural rubber (NR) waste incineration with electricity	-0,283
Polyester	Idemat2010 Polyester waste incineration with electricity	0,223
PLA	Idemat2010 Polylactide (PLA) combustion in electrical power plant	-0,228