

THE VALUE OF DESIGN RESEARCH

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DOES VISUAL COMMUNICATION GET THROUGH THE MARKET TO ITS AUDIENCES?

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ABSTRACT

In the 1880s, Philadelphia department store giant John Wanamaker said that he knew half his ad budget was wasted, but he didn't know which half.
(<http://staff.washington.edu/gray/misc/which-half.html>)

Abstract: In this paper, we use logo design as means of showing how variation in the consumer's perceptions can influence the effectiveness of a market. It is often assumed that consumers perceive the same message when they explore options in a market. If they actually see different things in a logo, like understanding the intended mission statement, the market is not working 100%. We refer to this as idiosyncratic variation which simply means that people see different things. This paper is an attempt to analyse different designs of logos to see how one can improve the common understanding of a logo and thereby the effectiveness of communication through the market. Keywords: Paper submission, instructions, use of template

1 INTRODUCTION

The design of a logo is characterized by creating affordances (Gibson 1986) for future problem solving and meaning creation (Heskett 2005). It means promising to enable people to perform a particular action and bring meaning to their lives. A logo is an utterance creating meaning in a metaphoric way like showing e.g. a horse to symbolize a way of travelling- even travelling with a different means than a horse.

Akerlof (1970) in his famous article argued that markets may sometimes lack in its ability for supply and demand to meet at a price and even break down. The sellers, who know the quality of their product may hold back and stop the selling to prevent a too low price. The buyer on the other hand only knows the average quality and may therefore decide to deduct an *insurance* to cover the risk of buying a car with a hidden damage. The mechanism concerns the presence of a *lemon*, which is a used car, where the seller obviously knows the list price quality (history of the product, repair etc.) and the buyer only knows the list price and the frequency of *lemons* in the present population of cars. In Akerlofs model the salient variable is the *estimate of the frequency* of the quality of individual products with a certain quality (p. 492). For marketing purposes in particular, this is good to know, but it is difficult to estimate when the break down may occur.

We therefore explore another procedure that may enable the marketer to evaluate the effect of a marketing message like a mission statement in a logo

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after one round. This is a pre-test, with its own realism. The procedure can easily be extended to products, where both quality and price (willingness to pay) are issues and it can also be used as a follow-up after the round of pre-test.

We want to explore the implications of consumers who are different; as individuals, and we want to quantify *differentness*. We want to investigate about more or less differences or more or less variation between people in a market.

The next section reviews existing literature, then an experiment with logos and finally the discussion concludes.

2 LITERATURE REVIEW

Several authors have contributed to the understanding of a market as a heterogeneous mechanism. Early contributions were establishing markets as consisting of a number of agents, the objects of exchange and relations between them. Authors like Joan Robinson (1933) and Edward Chamberlin (1930) in the 1930s explained that a market was imperfect and the information uncertain. Hayek explained the dynamic nature of markets and in the 1950, marketing contributed to the concept of *perfect heterogeneous markets* (Alderson 1957). According to this markets can be manipulated. Due to different preferences, a marketer may decide to investigate where the preferences for his offer of products is strongest and direct the effort to this *segment*. Segments with different preferences should be ignored, because the marketing activities directed towards them would be wasted. However, a market is not a stable physical structure and therefore not easy to analyse. In 1970 Akerlof analysed how a market could collapse due to asymmetry of information. We return to him below.

How does a market make the match between supply and demand? During many years numerous contributions have addressed this issue (Barry 1982). Inspired by Adam Smith, F.A. Hayek may be one of the most salient contributors, emphasizing a cognitive perspective with some pre-view of modern cognitive science. Although markets are often metaphors reflecting physical markets, a modern market is merely a *kaleidic* world, where each individual has only access to fractions of the total market. The knowledge in the market is dispersed among all the agents in the market and the process is referred to as a spontaneous order (Hayek 1945, 1979) or sometime (Buchanan and Vanberg 1991) as creative process. The *facts* of the market are dispersed among the many. Neither Hayek nor the others (Barry 1982) provides a cognitive mechanism of how the spontaneous or creative process take place, but indicates a *cultural transmission* of rules and practices (Hayek 1979). He did not think the matter was one of a scientific discovery, but had difficulty determining what exactly it was. Yet it seems viable, put in a modern cognitive language that this means each agent acts through embodiment (Clark 2003) and uses the *kaleidic knowledge* in a creative way to solve problems and create meaning through embeddedness (Granovetter 1973) and interaction in her or his social network. Here, designs come into the matter as objects, artefacts, services and experiences. Whether this, as economics would expect, leads to equilibria, does not concern us here. What does concern us is how the objects, artefacts, services and experiences are materialized as cognitive models.

Johnson (1987) delivers a possible response to that. According to him, pervasive features of bodily experience humans use to comprehend the environments and

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communicate to others come from the perception of the human body and forces dealing with movement, keeping a position, using the body for practical purposes. This Johnsons (1987) refers to as containment and boundedness in bodily experiences and writes, "Our encounter with containment and boundedness is one of the most pervasive features of our bodily experience. We are intimately aware of our bodies as three-dimensional containers into which we put certain things (food, water, air) and out of which other things emerge (food and water wastes, air, blood, etc.). From the beginning, we experience constant physical containment in our surroundings (those things that envelop us). We move in and out of rooms, clothes, vehicles, and numerous kinds of bounded spaces. We manipulate objects, placing them in containers (cups, boxes, cans, bags, etc.). In each of these cases there are repeatable spatial and temporal organizations. In other words, there are typical schemata for physical containment." (p. 21). The proper term for this is image schemata, describing the repeated and often stereotypical action (p. 65). Several image schemata are more complex than this immediately indicate, and it also makes sense that human being need to call them something to create meaning for themselves and to share with others. With image-schemata as the elementary building bloc, metaphors and metonyms provides the naming (Lakoff 1987, Lakoff and Johnson 1999). Terms like force, move, transport, fall, fly, take off all rely on image schemata and using metaphors we are able to refer to specific instantiations.

With logos, we enter into a language where certain signs, symbols, shorthand, figures are used to communicate affordances or how the people behind may enable to customer or user to take advantage of their objects, artefacts, services and experiences.

In this study, the focus is on how brand information in the form of logos. We need to investigate how a customer perceives a logo and the way to do that is to explore how the meanings refer to various affordances given in the form of mission statements. Various forms of analysis have been used. In some cases, like the so-called *conjoint models* (Urban and Hauser 1992), respondents were confronted with hedonic scales, being asked to grade products, simulating how consumer may choose in a given situation. While such methods are likely to assume a rather rational choice, an even better way was developed by Thurstone (1927, 1934). According to this model, the choices were based on a bipolar scale, where respondents only needed to indicate how they compared two items. He suggests a weight, where the respondents indicate the balance between the alternatives, rather than discrete choices. The weight may be seen as a metaphoric scale rather than a discreet one. This may be called a *conjoint layout*. Using a combinatorial approach this can be represented as a transitive scale. Taking the individual characteristic into account (source) it becomes possible to formulate a conceptual model based on random utility theory (McFadden 1986, McFadden and Train 1996, Louviere, Hensher and Swait (2000).

Research on logos pursues an analysis, where esthetic elements are seen to create emotional reactions (Henderson and Cote 1998, Veryzer and Hutchinson 1998, Hynes 2009) or identify mediation effects such as fluency (Janisewski and Meyvis 2001). Various modifying elements such as intercultural issues (Henderson and Cote 2003, Pittard and Jevons 2007), or rebranding and changes in logos (AlShebil, 2007). In addition, the majority of the approaches aim at fast aggregation of data to the level of the market.

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A process view is proposed to indicate that a good logo design is "easy on the mind", Mayvis and Jervis (2001) who adds a mediating variable, "fluency" meaning a logo perceived with a minimum of cognitive work. Cognitive work is typically measured by response times, how fast or easily respondents can get the message (Reber, Winkielman and Schwarz (2004).

One major approach is based on investigation of independent variables of the logo: "naturalness", "harmony", "elaborateness", "parallels" in the graphic, "round shapes", "proportions", and "repetition." Henderson and Cote (1998) is the most quoted contribution in this area.

Their study included a number of responses; terms explaining the logos qualities or interpretations, as dependent variables, "affect; good, liking, quality, interesting, distinctive", "familiar meaning", "correct recognition", "false recognition". In Henderson and Cotes (1998) study the responses were seen as from a single individual. They add the latter element "false recognition" to indicate that sometimes another company can benefit because people confuse the logo with another. Obviously this is a big problem for the company and concerned with the possibility that a respondent could be wrong about the identity.

Companies have a purpose like creating trust in the minds of the consumer, to persuade the customers to have the company as a first choice, taken automatically, in a shopping situation, to scare competitors, to make the brand or product a natural choice. Most literature contributions implicitly managed to indicate so. Some companies, however, are more explicit like Toyotas, "Moving Forward", BMW, "The Ultimate Driving Machine" or L'Oreal's "Because you're worth it". The focus seems to emphasize the future experience, whether it is ultimately, deserved, liking or whatever. It reaches out for a continuation of the message, like "listen to me...and wonderful things will happen to you, because you deserve it".

The esthetic elements are known as *gestalt forms*. Henderson and Cote (1998) use well known principles researched during the history of esthetics by Gestalt theorists such as Gombrich (1972) and Arnheim (1974). They were simple principles shown to attract attentions and used to create beauty. Gestalt phenomena are now even considered to be of a biological and even universal validity (Ramachandran and Hirstein 1999).

The main criticism of the contribution of Cote and Henderson (1998) is its lack of *performative content* and mere indication, that a receiver may get the message wrong. What does it mean to get it right?

Logos as well as other forms of communication are perceived and managed in the mind of the prospective customer. We assume a problem-solving and active perceiver rather than a passive response. The advantage of this is very clear. Rather than to test every esthetic element independently, everything is seen as a whole and measured according to the fluency. Fluency is shorthand for beauty. The user or customer uses the logo to inform themselves about possible offers and to make a choice. This is complementary to the marketer who informs by the illocutionary act. For the user or customer, the availability of the logo is an affordance, enabling them to make a choice and subsequently experience the benefit from a choice of an artefact, object, service or experience.

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3 RESEARCH DESIGN

Most market communication, including logos (e.g. Henderson and Cote 1998, Veryzer and Hutchinson 1998, Hynes 2009) treat the prospective customer as a respondent. We take a different approach looking at the active problem solving customer who looks for affordances (Gibson 1978) and enablers in the design. This is done by replacing a simple mediation analysis with a random choice model (Louviere, Hensher and Swait 2000, Louviere, Flynn and Carson 2010) to enable respondents to actively seek insights and make discreet choices via a binary and non-numeric continuous scale. In addition, we keep the analysis and the data at the individual level as much as possible, and only as the last operation perform an aggregation. This is because we need to keep the explanation at individual level (Elster 2007) and explore what happens by the individual rather than aggregating and loose the individual characteristics. Thereby we avoid what Ziliak and McCloskey (2008) label inferential construction, that we build our explanation around a typical rather than real customer. In many cases, the typical customer does not really exist and by aggregating too early, we make assumption about agents in the market that does not reflect reality.

We experiment with such processes as a way of exploring how prospective users or customers value the outcome when given a paired choice. "Will you take this one or that one" is based on using a computer, iPad with a screen showing visually pairs of choices with a line between. We may test a number of options and add prices, brand names and stories. The respondent will move the cursor towards the preferred choice. This way we may find a rating of a number of items enabling us to rank order how strongly each object, artefact, model or prototypes is preferred by a sample of users. The data collection is web based and may be done anywhere, also when no internet is available because the connection can be made later. We need to develop a statistical program to deal automatically transforming the data to a comprehensible output with statistical tests, graphs etc. The *research design* needed to explain and measure how logos serve as communication elements and how effective they are, depends on a setup using the web. It is important (Louviere, Flynn and Carson 2010) that the experimental procedure reflects the real behavior it is supposed to explore and explain. This means that a normal choice experiment, where tangible goods are to be investigated best take place in a real shopping environment and that the sequence of the experiment simulates a real behavioral process. Only if the experiment is intended to explain what happens online, should web designs be used. A common way of using picture of real objects on a pure web design is a poor research design when it is supposed to show what happens in a real shopping process. Similar should experiential studies of what the user or consumer experience and may feel satisfied with take place in their homes or else where such experiences take place. In the current study we use a web-based design because it is quite common that the first time a respondent meets a new logo and considers its promises take place on the web.

In this experiment, a Thai designer was asked to design a logo for a (fictitious) bus transport company. The missions or statements to be expressed through the logo were (*the bus*) arrives in time, (*the bus conducts*) safe and responsible driving and finally (*the bus represents*) cheap travel with convenient comfort and service. The decision was made to make a combinatorial design of a horse

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(see Figure 5) consisting of various movements or positions; quiet grazing, light trot, standing on the back legs and jumping. These positions may be called *prototypical* in the sense that they clearly signal speed and agility right now (Veryzer and Hutchinson 1998). The use of a horse on two legs is used by automobile producers to signal power and potency. That may be desirable when you are in power as the driver, but as a passive passenger in a bus you may differ.

Figure 5

In addition, the form and size of mane and tail were modified so there were three different sizes and shapes. Traditionally tail and mane – and in general – hair - is very expressive elements. Finally, the horse was shown with round eye, a slanted and no eye. People may not even be conscious of this, but it still can make a difference.

Figure 6 shows the horses and figure 7 is a screen dump of the choices (example)

Figure 6

3.1 Participants

The samples consist of a convenience sample in Thailand of N = 52, primarily students and their friends. In Denmark a larger representative sample was conducted by Webpol©, a professional marketing research agency owned by the press conglomerate Politiken: N=298.

In both countries the respondents were mailed a setup enabling them to make a series of paired comparisons of different versions of the horse logo following the general setup shown in as a screen dump figure 7. The sequencing was randomly ordered so there should be no adaptation through the process. In Denmark, the Webpol© has background information on its web participants comprising qualities like reading habits and age, sex, education, and so on. Such variables increasingly show neutrality towards peoples' attitudes. Reading habits have been shown to account for political, educational, and cultural differences between people; like which community they prefer or "life style".

3.2 Procedures

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4 RESULTS

Estimated orderings concerned the four aspects; positions of the horse, eyes, mane and tail. Figure 8 and 9 show how the horses' positions were perceived by the Danish and Thai respondents. The positions are very clearly reflected in the perceptions. In both countries a jumping horse reflects *reliability and no delay*. *Safety and responsibility* also reveal minor differences and it is clear that the slow moving horses indicate *safety and responsibility*. Concerning *inexpensive and comfortable* only the third position reveals some modest difference.

Figures 8 and 9

Looking at the eye on the other hand there are more clear differences. The Thai do not associate eyes to mean reliable as contrasted to the Danes. In particular, the slanted eye is seen with suspicion. In Thailand the round eye is seen to reflect safety and responsibility as well as inexpensive and comfortable. In Denmark the eye seem to reveal a very condensed position on the scales indicating that it has limited importance.

Figures 10 and 11

The slanted eye therefore has a more profound cultural meaning in Thailand. Berlyne and Ditkovsky (1976) analyzed *oddity* and found it to be generally disliked. They explained this by references to biological evolution as something potentially dangerous.

Mane and tail also indicated some variation, but actually very limited.

For each mission statement the total variation may be divided into variation attributed to each of the four attribute, position, size type, and eye. Also the total variation can be factorized into individual variation and market variation – and this factorization can also be performed for each of the 4 attributes.

For mission 1 *Reliable and no delay journey*, most of the logo variation is for both Denmark and Thailand attributed to position of the horse.

The individual variation is for both Denmark and Thailand rather large (73.7% and 56.7%, respectively). Note also that the shape of the eye contributes to the variation-more than the mane and tail.

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Figure 7

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It seems very clear that for mission 1, *Reliable and no delay* have limited market logo variation. This means that the respondents see the same and the differences are due to their different private inclination. Individual interpret the message in their own private way. For mission 2 *Safe and responsible driving* the position is the most important attribute in the sense that most of the total variation is due to the four different positions. For this mission statement the market variation is much higher. This means that concerning the interpretation of this statement the population is rather homogenous. In Denmark the fraction of common understanding is 63 % and in Thailand around 70 %. The high level of common understanding in Thailand is not least due to the interpretation of the mission in relation to the eye. There is a cultural agreement in Thailand that the slanted eye is suspicious.

For mission 3 *Cheap Travel with convenient comfort and service* is very similar to the mission statement 2 indicating that position is essential, about 50 % of the variation is individual and 50 % is market variation. This indicates a common interpretation and still a rather individual one.

The variations reveal that there is only limited variation across cultures. For both, the position of the horse gives most attribute variation, while mane and tail shows the least variation. Looking at individual logo variation it is deeper in Denmark than in Thailand, but this may only reflect the samples. As explained there was a representative sample in Denmark and mainly students in Thailand.

The individual logo variation is higher in Denmark and this may be attributed to cultural differences. While a horse is a major animal in transportation and work in the West, the elephant plays a similar role. It is more often seen in the street and that may explain a different individual logo variation for horses in Thailand. Perhaps a bit surprising, the market logo variation in Thailand exceeds the market variation in Denmark.

Of great interest is that some expressions like the position of the horses came through with a high level of precision. Similar the eye was also recognized and found to affect many Thai respondents. In this study the eye was the most remarkable cultural difference. This may be due to special cultural conditions in Thailand, but although the precise perception differed, eyes were also given more response than the mane and tail in Denmark.

The findings that indicate small trans visual differences may at first sound surprising. After all, Hofstede (1980) and Kahle (1986) found profound differences, but it may be the case that our findings rather indicate the level of basic emotions. After all symbols of e.g. horses in various position may not trigger embedded meanings only found in a single culture. It is possible that cultural differences depend on which element of life is at stake. Perhaps such issues as a bus travel does not trigger deep differences, but something like food, child care, personal greetings, or dress code may trigger larger differences.

The studies reported here show that such constructs as average consumer, typical, modal or blue or red... can be misleading. The terms are *inferential constructs* (Ziliak and McCloskey 2008) at an aggregate level and studies of variation shows that the constructs are not mirrored in reality. When that is the case only limited amounts of information is transmitted by the market and Babylonian confusion can dominate in the real market place. When the missions or intended message is clear and consistent with the esthetics of a logo, the chances are that it may reach a fair share of the market. The two experiments

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have shown that first of all it is very difficult to guess or assess the effects of a logo without detailed testing. The belief that designers or managers can confidently use his or her intuition to feel their way is flawed in our examples. In general, the logo market variation is very high and only in a few instances is the individual logo variation so high that we may assume a deep embedded knowledge. The reason why this may be so is that the logos we are familiar with have been seen many time. The mere exposure mechanism (Zajonc 1980) or perceptual fluency (Reber, Schwarz and Winkielman 2004) enables us to like symbols we have seen many times, even when we are not aware of their meanings.

Use the "Heading 1" style for the reference header. Use the 'Reference List' style for the references itself.

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Figure 1 Horselogos combinatorics

Figure 2 The horses in combination

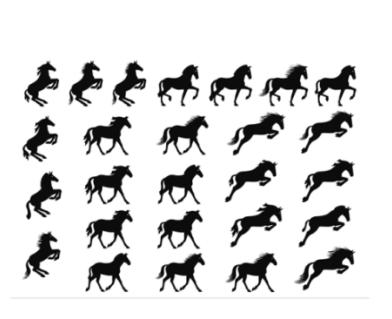
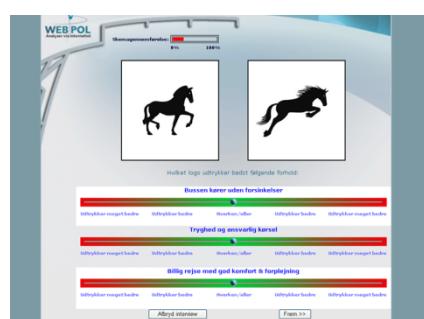


Figure 3 Screen dump of interface with respondent



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Figure 4 Danish assessments for positions

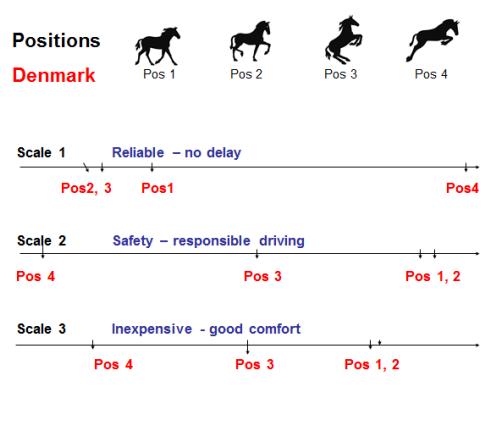


Figure 5 Thai assessments for positions

Figure 6 Danish assessments for eye

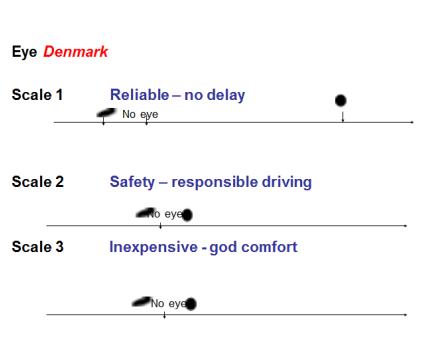
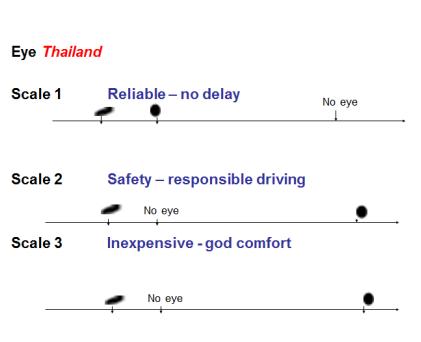


Figure 7 Thai assessments for eye



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Table 1A Analysis of variance Mission statement 1

<i>Source of variance</i>	<i>d.f.</i>	<i>s.s.</i>	<i>m.s.</i>	<i>F</i>	<i>p</i>
Deviance from rating scales	187	1583.1	8.47		
Residual					
Between subject variation of rating scales	744	15324.4	20.60	2.433	<0.0001
Between logo variation (common rating scale)	4	3962.5	990.61	117,016	<0.0001
Total	935	20870.0			

Table 1B Analysis of variance Mission statement 2

<i>Source of variance</i>	<i>d.f.</i>	<i>s.s.</i>	<i>m.s.</i>	<i>F</i>	<i>p</i>
Deviance from rating scales	187	1298.7	6.9		
Residual					
Between subject variation of rating scales	744	17457.8	23.5	3.379	<0.0001
Between logo variation (common rating scale)	4	2816.6	654.6	94.260	<0.0001
Total	935	21375.1			

Table 1C Analysis of variance Mission statement 3

<i>Source of variance</i>	<i>d.f.</i>	<i>s.s.</i>	<i>m.s.</i>	<i>F</i>	<i>p</i>
Deviance from rating scales	187	1803.9	9.6		
Residual					
Between subject variation of rating scales	744	17924.5	24.1	2.498	<0.0001
Between logo variation (common rating scale)	4	2963.6	740.9	76.807	<0.0001
Total	935	22692.0			

Tabel 2 Decompositon of sources of variation for the 3 mission statements

<i>Source of variation</i>	<i>Mission Statement 1</i>	<i>Mission Statement 2</i>	<i>Mission Statement 3</i>
Between subject variation of rating scales	79,5 %	87,0%	85,8%
Between logo variation (common	20,5 %	13,0%	14,2%

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rating scale)			
Total	100 %	100 %	100%

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Explaining variables at the aggregated level

The estimated rating of the 5 logos for each of the statements is shown in Figure. It is seen that logo 1 is close to logo 3 while logo 2 is different from 1 og 2.

Estimates (as sum to zero)

parameter	Logo	Preference Missionst 1	Preference Missionst 2	Preference Missionst 3	
a1	1	-0,771614973	-0,954973262	-0,75940107	
a2	2	1,4298823529	-0,484962567	1,2437433155	
a3	3	-1,391508021	-1,105005348	-0,96573262	
a4	4	-0,559315508	1,9290695187	-0,660235294	
a5	5	1,2925561497	0,6158716578	1,1416256684	
Are the logos equally good F-test		P= 0.0074	p.1178	0.0093	

As the 5 logos is "just presented as 5 logos" there is no a priori hypotheses, however as a natural hypothesis we may ask whether all of the logos are equally good at statement:

For mission statement 1 (the statement) the logo are not equally good expressing the statement, p=0.0074, also for mission statement 3 the logos are not equally good expressing the statement, p=0.0093. For mission statement 2 (statement) the logos can be assumed to be equally good in expressing the statement, p=0.1141.