Globalization of market research tools – The digital pack test

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The paper describes a research approach which is particularly suited for international research: a standardized pack test methodology which utilises latest multimedia technologies for on-screen testing of new pack designs. The digitalization of the test material speeds up the research process, avoids the disadvantages of traditional mock-up-testing and gives the client a greater flexibility in setting up and conducting the research.
The authors explain the process of digitalization, the pack test methodology and finally the research design and results of an international pack test from the client's point of view.

1. Number of “international” methods

International market research is the fastest growing sector in our business reflecting the increasing efforts of client companies to offer their products in a global – or at least multi-country – market. As a consequence the international marketing activities of clients lead to an increasing demand for international research and for research techniques that work also beyond the domestic market. As the market research „industry” is often more an economic than a scientific enterprise following the rules of supply and demand, client companies nowadays are frequently bombarded with promotion materials of MR institutes offering *unique*, *state-of-the-art* or - even more „humble” – *world-leading* standard products for almost every area of marketing research.

2. Pitfalls and the need for practical solutions

In contrast to the sometimes misleading safety which the term „standardization” is suggesting, it is not always easy to figure out what will or will not work in international research. But naturally the international standardization of research techniques makes sense as soon as the methods have been properly tested and validated.

The potential pitfalls of standard methods in international research, e.g. biases of scaling procedures due to cultural differences in response behaviour, have been reported a number of times elsewhere and professional researchers will always keep them in their minds. Nevertheless, this cannot mean that international research stops using standard methods at all. Often only by trying out one learns about the potential problems involved. In addition, market researchers should not stop looking for further possibilities to make international research easier and more valid.

Anyway, one cannot only concentrate on problems and pitfalls, but has to provide also a positive outlook showing the possibilities of international research. Fortunately there are possibilities and our paper wants to point to one of these. It presents an approach which is particularly well suited for international research. The method for testing new packs is utilising newest multimedia technologies which can integrate market research much smoother into the marketing planning process than ever before.

3. Problems of international pack testing

The current technical developments in computer graphics have made major advances possible in different areas of marketing research. The main areas are pack design testing, industrial design testing and virtual shopping. In this paper we concentrate on the area of packaging development and testing and describe the enormous benefits digitalization provides here. These benefits are shown best by first of all outlining once more the usual difficulties and barriers of international packaging tests.

Achieving pack design harmonization across different markets is not easy. Often it requires extensive pack testing. The problems start with the branding and the product information on the packs:

- *Would you name a product against skin impurities in Mexico or Spain “Piel con impurezas“ or rather “Piel con tendencia acnéica“? And how do these name alternatives in their German translation work out in Germany?*

To answer these questions just visit a Spanish, Mexican or German pharmacy. The products have been launched in September and research has found the best product description in each country.

- *Would an artificial word like "Hexi" be a good name for a soft drink in China? Would it be equally suited for Beijing, Shanghai and Guangzhou?*

No, because it would mean that the manufacturer wishes that at least some of the Chinese consumers would drop dead: in Beijing the word sounds like a cheap mass product, in Guangzhou people think that a product with this name is a good combination of a modern western product with Chinese tradition and in Shanghai it sounds exactly like "I wish you would be dead!" Definitely a good start for a long-lasting and trusting customer-relation!

Other problems to be resolved are regarding the pack design itself:

- *Can you trust a colour scheme for a nasal decongestant, which is working well in the U.S., also in Germany?*

No, you can't. The results told the client that the colours would ruin their brand essence in Germany: a well balanced combination of smooth effectiveness ("Also well-tolerated by my children") and reliability ("A brand I can trust") which was ideally communicated by the current pack design. Although the alternative design route was more powerful it was at the same time too aggressive.

Problems of this kind make international packaging research difficult and costly. In international pack research, client companies are anyway forced to spend a lot of money for the production of mock-ups. A five country pack test with three new design routes and two locations per country with two interview places requires at least 60 mock-ups. Saving money for mock-ups here would only be possible by testing in less locations or testing one location after the other. The first option could risk the validity of results, the second option would double or triple the time for the fieldwork. So in the past it was this kind of cost and time problems which prevented companies too often from testing an international brand's packaging outside their domestic market. For the same reason the number of tested design routes became limited to only two or even one.

4. The new options of digitalization

The digitalization of the stimulus material has changed the situation completely. Suddenly one needn't produce mock-ups any longer, one can avoid the cost and time involved in their production. Instead the material is stored on CD-ROMS, easily copied and then shown to consumers in central locations using personal computers or projectors. The new packs can be shown and tested in a biotic environment with local and international competitors. They are tested without the limitations of plain photographs on one hand and „Please-do-not-touch"-dummies on the other. Digitalization allows to show three-dimensional packs on screen and to even zoom details like product information or instructions of use to be studied by the respondent.

But it's not only the enhancement of traditional research techniques - like for example brand-price-trade-off-measurement or classical conjoint measurement - that makes digitalization the approach of the future. The packs can be easily manipulated to test different research hypotheses: with digital packs the researcher can separate the effects of the plain, unbranded pack from the brand image communicated by brand name and logo, which can be of interest for new, innovative packaging or higher-priced consumer goods like cosmetics. New packs can be put in a virtual environment to test the POS-behaviour of consumers, allowing the researcher a much better control of the data collection process than ever before.

Limited by the means of conventional mock-up-tests, creative design ideas or variants of one basic design idea often did not went into testing. Multimedia-

based pack testing triggers an interactive and creative process between pack designers, clients and the consumer: a limitation to specific pack executions is no longer necessary, variants of the same basic design route can be tested without severe cost limitations.
Avoiding prototypes means also a greater security as it is much easier to keep the multimedia material confidential. And – not surprising – the danger of damaged mock-ups during transportation or fieldwork is also no longer existing. These are more practical, but nevertheless important advantages of virtual packs.
Digitalization and multimedia techniques are ideal tools for standardized international pack research. It does not matter whether the focus is on brand recognition, attractiveness, product expectations or shelf impact – all these stages of a packaging test can be administered this way.

5. The organizational aspects: the communication process

The procedure of producing virtual pack displays for testing is naturally a highly demanding technical task and can not be handled successfully on a project-to-project basis with different multimedia agencies involved. Basically there are two promising ways for a market research institute to develop digital pack test systems: installing an in-house multimedia department within their company or establishing a joint-venture with a leading multimedia supplier based on a long term business relation. We have chosen the second route for good reasons: we always have access to the most advanced CAD-software available on the market and profit – as well as our clients – from a team of ultra-professionals which perform more like “wizards” then like CAD-specialists. We – as market research professionals – naturally stay in charge for the implementation of the methods in a digital environment be it shelf impact measurement or brand-price-trade-off based on virtual packs.
There is another aspect market researchers in institutes should be aware off. In traditional pack research projects their work began with the arrival of the mock-ups or pack photographs at their offices. Setting up a digital pack test requires more a-priori communication. To avoid any inconveniences for the market researchers, the communication process on the clients side has to be formalized: clear information what can and can not be done with multimedia techniques, at which costs it can be done and which input is needed from the pack design agency of the client. Thus the responsible project head of the institute has to be familiar with the technical processes involved – not at an “ultra-professional” but at least at a “semi-professional” level. Direct communication between the pack design agency and our multimedia team is only allowed for necessary “tech talk”, e.g. specifying the details of data formats and data delivery. All other topics – addressing the flow of the stimulus presentation, the facings and rotations of the brand in the shelf, the quality checks and so on – are solely discussed between the market researchers/product managers and our research executives after we have made a proposal for the research design and its digital implementation (see Graph 1).

Graph 1 about here

Multimedia techniques even help in dealing with negative test results. By using multimedia, designers can react much faster to make the necessary changes. The revised packs can easily be implemented in the digital environment of the first test phase and be tested once again.

6. The technical aspects: capabilities of multimedia

Basically we distinguish two categories of multimedia work: two dimensional (2D) and three dimensional (3D). This does not mean that 2D-objects look flat and artificial and 3D is always superior. A lot of FMCG, such as cereals, canned soft-drinks, chocolate bars and many more, can be viewed in a supermarket shelf only frontally. 2D packs usually look as realistic and spatial as a high quality photograph. But they can not be freely manipulated – e.g. viewed from all sides and angles – as can be done with 3D models. Which way to choose finally depends more on the questions of the research than on the budget of the client, but clearly 3D modelling is also more expensive. In most pack research studies 2D models proved to be absolutely sufficient, exceptions are for example shape design tests where the pack has to be viewed from all angles and durable design research with its usually higher demands regarding the stimulus presentation. Usually the output of multimedia work for a pack test is a CD ROM with a stand-alone, self-executable program that leads the interviewer through the complete test procedure showing all the pictures according to the flow of the interview. Naturally one can produce also all kind of high-resolution photographs of the virtual packaging.

Common software for **2D modelling** is PhotoShop, Freehand, Illustrator or Corel Draw. It is essential that all professional formats used by designers – e.g. all bitmap formats like Tiff from Mac or PC – can be imported and that more exotic formats can be translated to the more common ones. A variety of changes can be made to the digital packs: colours, typefaces, layout or the texture of the surfaces can be manipulated. We never use this option without clear orders from the client as we are researchers and not pack designers. Following this principle is at the same time the best recipe to live in peace with the pack design agency of the client!

But three little examples indicate the potential of these possibilities for research:

1. The client had prepared a glass dummy of a bath-foam product for a pack test in Germany. The glass bottle was taken from an existing UK product and the labels were delivered by their German design agency. The labels showed the German brand name “XYZ”, but unfortunately the English brand name “ABC” was engraved into the glass bottle and could not be removed physically. The dummy could have been used only for some kind of basic research on brand confusion! We shot a photograph of the dummy for a digital pack test and removed the engraved writing as if it had never been there.
2. At the beginning of a pack test the client made us aware that a main competitor planned to change the name of their product from “ABC EXTRA” to “ABC” only. He suggested to wait several weeks until this version would be available in the market. By simply showing him a digital version of the competitor pack with the EXTRA-writing removed and all blank parts of the label nicely rearranged we easily convinced him that the pack research could start immediately.
3. A wooden dummy of a cleansing product with a surface painted in green to imitate a filled transparent plastic-bottle was obviously not suited to be tested disguised against its competition. Multimedia work changed the texture into a transparent plastic-look and finally the new bottle looked as realistic as the digital version of the current pack.

For **3D modelling** we use different state-of-the-art software which can handle all common formats like 3DMF, DXF, PICTG, AutoCAD, IGES and Illustrator. Where mock-ups exist they can either be photographed to produce a 2D image as described above. To create 3D objects the mock-up is usually filmed and a QuickTime object movie is created. Finally the interviewer or the respondent can view the 3D object during the interview from all perspectives. If the new pack is not physically existing the design agency of the client has to deliver a 3D model which can be further manipulated or assembled with competing brands to produce a photorealistic test setting. It is even possible to create 3D objects from flat artwork, but obviously this is the most expensive route.
Costs for creating the stimulus material of a digital pack tests naturally are not market research costs. It is important to ask clients at the first project briefing to compare the costs for mock-up production – usually these are costs covered by the budget of the brand management – with the costs for multimedia production. We rarely got the answer that the “physical route” was beating the digital pack test in terms of costs!
Whereas the costs for mock-ups increase almost linearly cost savings for the production of multimedia materials are significant in case of many designs or many countries. The basic programming has to be done only once and creating further “country cells” or “design cells” creates only limited additional costs.
The process of quality control became in times of the Internet much more convenient than it used to be before. The first multimedia pack tests we did required the production of demonstration CDs which were either personally presented or send to the client by courier for approval. Today we e-mail the virtual packs for evaluation purposes or the client enters our web site with an access code to pre-view the material.
Fieldwork is usually conducted with Personal Computers (Pentium) running under Windows 95/98 or NT. As PC’s are an almost “universal” tool there have never been local restrictions for digital pack tests so far. In case of multi-country studies precise technical specifications are given for the local fieldwork operations regarding the size of the displays (17´´ inch standard, 19´´ up to 21´´ if required), the resolution of the graphics card (e.g. 1024 x 768, 32bit true colours) and so on.
At the end of a project the client can have a final CD containing the visual material, data in SPSS, EXCEL or another standard data format, tabulated reports, presentation charts and the management summary. This has proven to be not only a “fringe benefit” of the nice new multimedia world as many clients have started to built data warehouses and internal information systems. Even after years the complete material of a pack test project is available at your fingertips or can be stored in the intranet of the company – accessible for market researchers and marketing managers.

7. The methodological aspects: an international pack test system

It should be clear by now that multimedia offers a fascinating technique but it is in the end simply a *tool*. But combined with an advanced pack test *methodology* the result is the most powerful instrument for international pack research that is currently available. How should such a pack test method look like?
So far most pack test systems available are evaluating packs by only a limited proportion of all relevant criteria. The most popular method is to rate a pack in terms of its *attractiveness* and to discover the reasons why these ratings are given. A pack profile can then be constructed. Besides *purchase interest* and

brand image have been investigated together with *the influence of the pack on product expectation*. But there have never been systematic attempts to separate the influence of the *brand name* as such from the pure *impression of the packs* which are confounded in traditional ratings of brand image based on the perception and evaluation of branded packs. The capabilities of Multimedia have now made it possible for us to include tests of this important question in our pack test methodology.

Pack tests focussing on the criteria mentioned above hardly ever investigated the *brand recognition* in the same test. Sometimes it was independently investigated in a separate sample. However, this test was never widely used as it involves considerable additional cost. *Shelf impact* is another criterion of pack performance which was not tested at all for many years. Shelf impact means the capability of a pack to attract the attention of consumers and become a recognized brand amongst its competitors in the market place.

As BRAND RECOGNTION and particularly the SHELF IMPACT of a pack are extremely important, we have developed a method (PACK∗DYNAMICS™) which allows us to investigate both criteria within the same test sample and in the same interview. The following graph shows a typical path of our pack test interview (see Graph 2):

Graph 2 about here

The *BRAND RECOGNITION test* at the start simulates the consumer's initial reaction to the product and asks: "Does the consumer (still) recognize the brand?" This is a question of high diagnostic value especially when new design routes are "revolutionary" and not "evolutionary". At the same time we can discover which of the pack's characteristics mainly communicate the brand: the shape, the colours, the logo or the typeface. The BRAND RECOGNITION test can also be conducted with a whole product range to find out the degree to which the pack design allows the differentiation between products within the same range.

The brand recognition part is followed by the *main interview* containing all the classical criteria of *brand communication* and *pack evaluation* as mentioned before. Each design route – the current and new ones – are tested against the same field of competitors (which naturally may vary from country to country). Competition is not only visually presented but fully included (brand choice, image scaling). Recruitment and flow of the interview guarantee that the respondents are not aware during brand recognition and the first part of the main interview which is the test brand. Sometimes we uncover the test brand in a later stage of the interview, if the client needs more detailed information about the test pack. But at this time the "hard facts" - the performance against competition - have already been collected without bias.

Following the main interview an experimental test is added which determines the SHELF IMPACT of the test packs. The respondent is shown a series of slides or computer images which depict shelf arrangements. Typically up to 10 brands are arranged in rotating order. In each arrangement the respondent has to indicate as quickly as possible whether the shelf contains the test pack or not by pushing a button. The finding time is automatically recorded. Only after the respondent has pushed the button he tells the interviewer whether he had seen the test pack or not. Naturally there is a predefined number of shelves with and without the test brand allowing for an analysis based on the traditional *signal-detection-paradigm:* for each shelf arrangement we obtain two measures, the

speed and the accuracy of recognition. Short reaction times and high accuracy indicates a high ability of the test pack to stand out from competition. Low accuracy of reactions – in all scenarios where the test pack is not present – indicate a high degree of brand confusion. This is addressed further by asking questions of a more qualitative nature. As the SHELF IMPACT measurement is conducted at the end of the main interview, the respondent will also be familiar with the new pack design – an essential requirement to compare current and new packs. This compensates for any advantage ("familiarity factor") which the current pack has in terms of prior recognition.

Unlike data from scaling procedures the more basal data like perceptual speed and binary yes/no-reactions can be compared across different countries without any further "calibration".

To measure brand recognition and shelf impact for a pack together with the other criteria of pack performance within the same interview provides a considerable added value. The sample size does not need to be increased but the interview will be longer. The additional cost is much smaller than the cost for a separate test sample making this approach also more attractive and affordable for multi-country studies.

There are new pack designs which enjoy a stronger branding and communicate a stronger product than the current pack design, but the purchase interest they evoke for the brand is less. Sometimes the reason for this is that the new pack design evokes product expectations, which do not fit into the brand image. This is a problem, which needs a particularly careful analysis.

Within PACK∗DYNAMICS™ we can investigate the influence of the new pack on the brand image in greater detail by separating the brand image itself from the effect achieved purely by the pack design on the overall image. This is possible for the first time via an absolutely "clean" measurement process as multimedia techniques easily allow the production of "unbranded" packs by removing brand names electronically and replacing them by descriptive product names.

In order to separate the existing brand image from the image effect achieved purely by the pack, we use the following experimental design (see Graph 3):

Graph 3 about here

Half of each test sample at the start rates only the brand image based on the brand name. The other half rates the image based on the pack design which does not contain the brand name, but the name of the product category instead. After this investigation of different images - naturally we also ask how many respondents have identified the brand despite the missing brand name - in the main interview we investigate the brand image based on the branded pack which corresponds exactly the exercise in the usual approach. This experimental design allows the precise investigation of whether the new pack design is suitable for the existing brand by simply analysing the differences between the ratings from all three sources.

8. The practical aspects: a case study from the clients view

This case study reviews the design test for a new skin care product of Beiersdorf *EUCERIN Impure Skin* in two countries using a digital test methodology. Before going into the case study, a short introduction to the brand: Eucerin is a skincare brand distributed mainly via pharmacies. It is positioned as a problem solver for people with sensitive or problematic skin:

Eucerin – the medical skincare program.

Originated from Germany, it is now available in over 20 countries mainly in West-Europe and US/ South America. Due to specific country situations, ie. legal restrictions, the life cycle of Eucerin, the role of pharmacies, the marketing strategies vary. Under the Eucerin brand different product lines exist, each focusing on a different skin type or skin problem, i.e. pH5-Eucerin Sensitive Body Skin, Eucerin Sensitive Face, Eucerin Mature Skin and Eucerin Dry Skin.
The latest line extension development is a product range for people suffering from acne prone or impure skin. The range consists of five different products for the daily face care.

8.1 The objective of the study and action standards

Two different packs (carton) designs were developed –

- A straightforward medical pack and
- A more cosmetic pack - in line with other face care products.

Furthermore, different descriptions for the product indication had to be tested

- *EUCERIN Impure Skin*
- *EUCERIN Acne prone Skin*

The objectives of this research were quite extensive. The research brief covered a wide range of test criteria:
How strong is the impact of the packing? Is it attractive within the target group?

- Does it fit to the EUCERIN brand? Does it support the EUCERIN brand image?
- Is the text understandable? If we name it „Acne prone skin“, will it be attractive?
- Will there be any confusion among the brand range, because of a similiar color coding to the Eucerin Mature Skin pack (both are green)?
- Do the people understand the icon on the package?
- What about the price expectations and acceptance?
- Is the perception the same in different countries?

Just to list the main questions.
The following action standards were set by the Marketing Management:

- Positioning - Best on medical aspects without neglecting appeal
- Pack Attractiveness - At least parity to market leader
- Understanding - No distracting text elements
- Impact/ Branding - At least as good as competition

As benchmarks the category leader for impure skin as well as the leading brand in the pharmacy were chosen.
It was decided to do the research in the lead countries Germany and Spain.

8.2 Why a digital approach?

Beiersdorf is on the one hand a traditional company, but on the other hand very open for innovative technologies. This is also true for market research; we always try to keep a good balance between pragmatic approaches with respect to history and comparability and innovative methodologies or techniques.
Within another business unit some first promising experiences with a digital approach for package design had already been made. Reconsidering the planned excercise, the ‚international aspect‘, the available options and timing as well as the budget, we decided to start digital pack testing for Eucerin.
The main advantages seen were:

- Increased flexibility and time savings.
  On the one hand, we saw time savings for the production of mock-ups by using directly the CAD files from the design agency. The adaption of the

local wording became faster and we could more easily change or correct things – without loosing too much time.
On the other hand, we expected less time for fieldwork, because of simultaneous interviewing at several places.

- Cost savings for the production of mock-ups.
- Less coordination effort in international studies.
  This was clearly my special interest, because the organization of local test packs to be shown and the set up can be a burdensome and time-consuming task.
- Easier logistics and handling of local fieldwork and therefore higher safety.
  The scope of the project was complex and a method was needed that allowed a flexible arrangement of packs during the course of the interview. We intended to get information about the impact in a competitive environment, the pack perception compared to main competitors, the understanding of text for 4 different products and the differentiation from the current Eucerin range.
- Earlier availability of results.

8.3 The interview

Classical pack test criteria like pack evaluation, purchase interest, product expectation, fit to brand etc. build the corps of the questionnaire. Furthermore, with respect to the specific distribution channel, information was needed about the understanding of the text and product names on the pack.
The interview followed this route (see Graph 4):

Graph 4 about here

The interviews started with a simultaneous presentation of 4 brands, each represented by a range of 4 products (Brand Recognition). A comparison of 3 brands followed (EUCERIN vs. two competitors), then the Eucerin test pack was shown separately for further diagnostic questions. After that each respondent had to read the front pages of two different products. In Germany a stand-out for the EUCERIN shelf was added to determine if there is any mix-up with other EUCERIN products. Per country two monadic cells with matched samples of 120 respondents of the relevant target group were done.

8.4 The Outcome

The results of the design test were very promising:

- *Positioning* The pack evaluation show that Eucerin appears highly medical, but also incorporates some cosmetic appeal. The pack strongly communicates the effectiveness of the product while conveying an extremely skin friendly product.
- *Attractiveness* Overall attractiveness of the Eucerin pack is slightly higher than for major competitors in Germany and on a good level in Spain.
- *Understanding* The clearness of text on the pack had to be improved and the package was too crowded.
- *Impact/Branding* Was on a high level in Germany and good for Spain due to the strong presence of the brand name.

As a global pack design, the stripes version will be launched. It tested good and it fits better with the overall positioning. Whether the product indication will read „Impure Skin“ or „Acne Prone Skin“ is left up to regional marketing strategies. Both versions tested good. The test lead to changes in the pack text, while the

overall design is kept. If you are from Mexico or Italy you are among the first, who can benefit from these products. The range will be in the pharmacy shelf, when you are back home. In case you want more information: ask your local doctor or pharmacist.

8.5 Conclusion

This was the first application of the multimedia pack design test for Beiersdorf. It was a positive experience. Otherwise Beiersdorf would not be ready to talk at ESOMAR about their experience. There were, in particular, three aspects which were most convincing to us:

- The preparation as well as the conduction of this test were highly flexible and saved a lot of time. With the digital pack shots it was possible to perform changes of pack designs in nearly no time and during the conduction there were no restrictions concerning the number of test locations.
- The co-ordination process between countries became much simpler: The competition's products included were sent to ISM GLOBAL DYNAMICS to become scanned. The digital pack shots of the test designs were then sent via the Internet to the client's Marketing Departments in each country for approval.
- Confidence and reassurance concerning the local fieldwork: The international and the local Marketing Managers attended the in-hall interviewing and were highly satisfied with the smooth and easy flow of the interviews. They were surprised about how much familiar interviewers and respondents already were with the multimedia facilities.

In two other aspects, however, this first multimedia application of Beiersdorf was not 100% perfect yet:

- Cost savings with test material production: Although we could not expect huge cost decreases here because of the cheap packaging material, we will arrange a smoother flow of materials from the design agency to the research company next time. We have learnt it is important to include the design agency at the earliest time possible for technical specification (i.e. 3D vs. 2D images, file format).
- Earlier availability of results: Although in this case we were fine and obtained the results in time, it is clear that the ideal multimedia pack test should make full use of computerization by gathering all responses via PC. This makes results available shortly after finishing the fieldwork, which is the more important if results are not satisfactory and a rework of pack design is necessary.

With this outlook to an even improved multimedia pack test we would like to finish this article. It should have become clear that our first application of a multimedia pack test was not our last one. Contrarily, we are going to expand the scope of digital pack testing wherever possible. Besides, at Beiersdorf we are particularly active in testing other digital options for market research. This year we conducted our first concept test on the Internet and sometimes - as a client - we are even ready to help research companies. So last month we attended ISM GLOBAL DYNAMICS' seminar on the status and the prospects of market research via Internet as speakers and told the audience about our experience with a monadic concept test on the web.

We are sure you agree to the view that what two years ago we perceived as the future of market research has become presence much faster than expected.

References:

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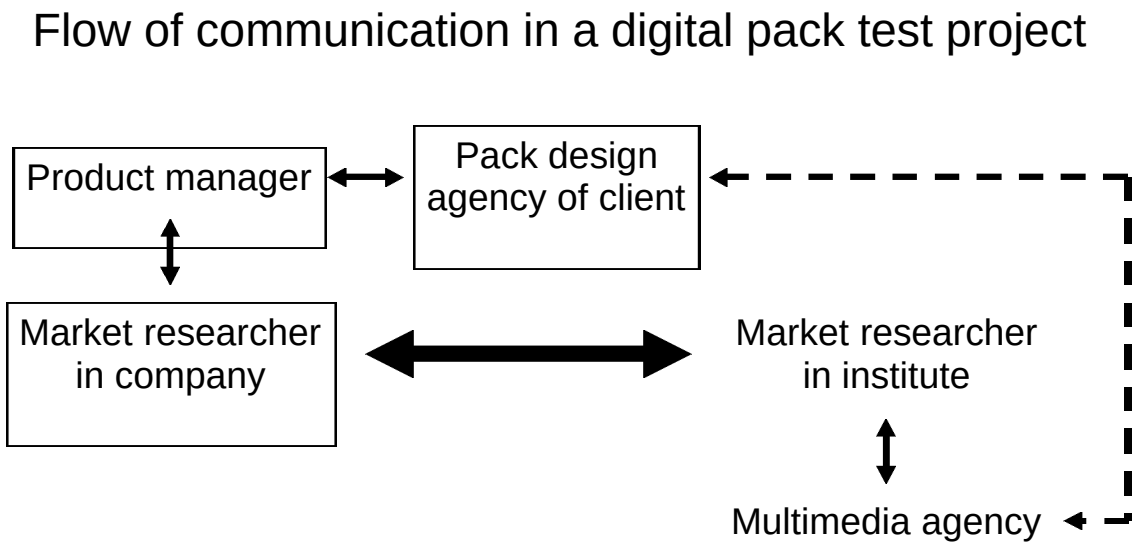
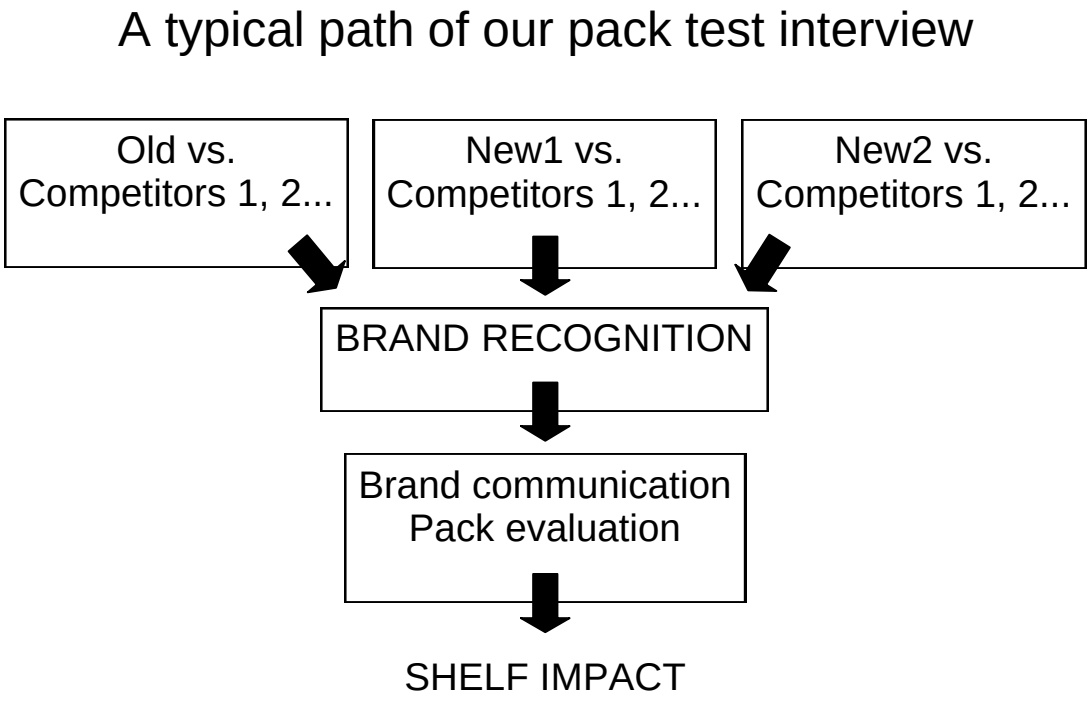
Charts

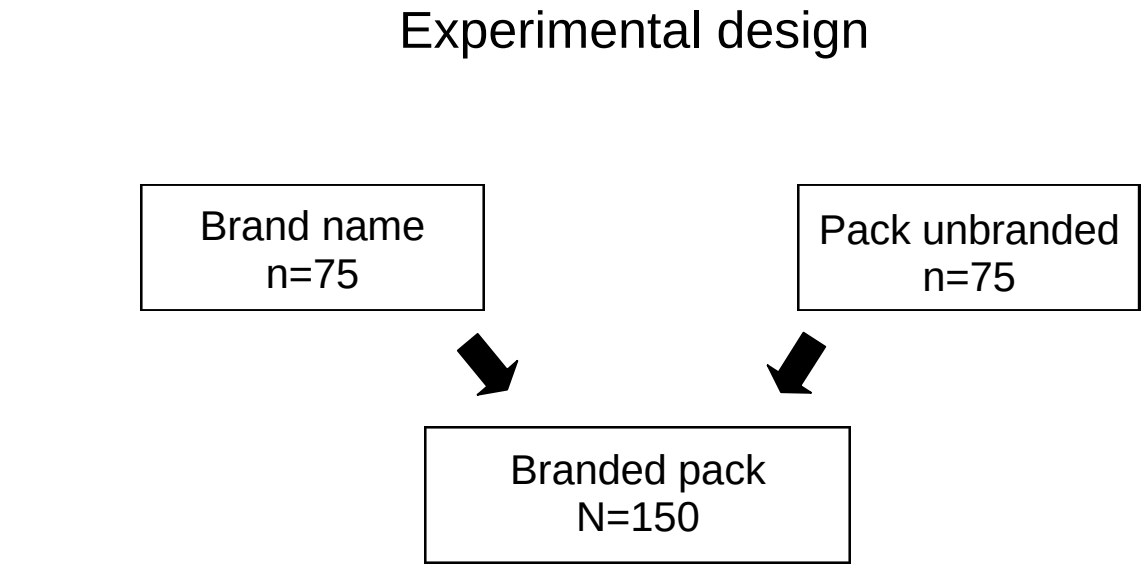
Graph 1



Graph 2



Graph 3



Graph 4