WIPO/IFIA/KUL/96/2
ORIGINAL: English
DATE: August 1996

INTERNATIONAL FEDERATION OF
INVENTORS' ASSOCIATIONS
(IFIA)

WORLD INTELLECTUAL
PROPERTY ORGANIZATION
GENEVA

WIPO-IFIA INTERNATIONAL SYMPOSIUM ON THE COMMERCIALIZATION OF PATENTED INVENTIONS

jointly organized by
the World Intellectual Property Organization (WIPO)

and
the International Federation of Inventors' Associations (IFIA)

with the cooperation of
the Malaysian Invention and Design Society (MINDS)

supported by
the Ministry of Domestic Trade and Consumers Affairs, Malaysia

Kuala Lumpur, August 18 to 22, 1996

PREPARATION OF FEASIBILITY STUDIES AND MARKET SURVEYS

Lecture presented by Dr. Dirk Groenewegen,
President, IPD-Consulting,
Board member of the Netherlands Association of Inventors (NOVU)

1. Inventions, serendipity and pseudo-serendipity

What do Penicillin, X-rays, Teflon and Dynamite have in common? Serendipity! These diverse things were discovered by accident, as were hundreds of other things that make living more convenient, pleasant, healthy or interesting.

The word Serendipity comes from an old fairy tale about the adventures of the Three Princes of Serendip (the ancient name for Ceylon, now Sri Lanka), who were known for their discoveries and their way to interpret them.

The word Pseudo-serendipity has been coined by Royston Roberts who wrote the standard book “Serendipity and Accidental Discoveries in Science.” Pseudo-serendipity is used by him to describe accidental discoveries of things sought for, in contrast to the meaning of (true) serendipity, which describes accidental discoveries of things not sought for.

In fact, inventors, who are the subject of this meeting, may discover things both ways:

- accidentally, whilst not seeking a thing, and

- coincidentally, whilst seeking a thing.

2. Inventors, intrapreneurs and entrepreneurs

Another thing to keep in mind is the question whether or not an inventor is employed by somebody else or is working fully on his own.

The last category of inventors deserves our greatest respect (or sometimes our compassion), because they take great risks, they are the real entrepreneurs. Unless they do not find a suitable patronage they have to pay every step in the development of their invention from their own pockets.

The first category of inventors also deserve our respect, but they take less risks, although they sometimes may have to ignore their management in order to reach their goals and set their careers at risk. Then we may call them intrapreneurs.

I have discovered a third category of inventors, those who have a job, or are being paid otherwise, and (I hope so) invent in their free time. I call them hobby inventors, but they may become entrepreneurs sooner or later.

What do they all have in common?

3. Passion to invent

Why on earth is somebody inventing something? There are very philosophical approaches to this question, such as: Inventions come from the 4th dimension, the time was

ripe to do it. That is why you sometimes see inventions emerging in different places but at the same time. A good example is book-printing.

We, as Dutchmen, claim that book-printing has been invented around the year 1450 by Laurens Jansz Coster in the city of Haarlem, whilst others in the western world actually believe that Johannes Gutenberg from the city of Mainz took the lead. I would not be surprised that in the Eastern World others have invented book printing at the same time or even earlier.

The common denominator of inventing (or discovery) however is that somebody has a strong intent for change by which he (or she) believes that the lives of his fellow men will be improved (and of course to his own benefit as well). This can be a new route to the riches of the Orient by sailing west (as did Columbus) or a puzzle which adds to brain-training and communication between those playing with it, as did Mr. Rubic in the 80's with his Rubic cube.

But why did they know what to do? From the following we will learn that a systematic approach is a prerequisite for success. Market survey and feasibility study are key factors in the innovation process.

4. Finding opportunities

Let us return to Columbus and the way he discovered the New World.

Christopher Columbus was born in Genoa about 1446 and studied mathematics and natural sciences, including nautical astronomy at the then (and still) famous university of Padua. He went to sea at about the age of 15 and visited England, Ireland and Iceland, Greece, Portugal, Spain and other countries. In Portugal he married the daughter of a captain in the service of King Henry, who first explored the Atlantic west of Europe and Africa. From studying the charts of his father-in-law and of other captains he developed a forceful aspiration to find a new route to the riches of the Orient by sailing west.

Actually one may assume that Columbus knew of the sagas from Norse sailors in the centuries before him describing lands found by sailing farther west from Greenland. But actually his discovery of the New World was also caused by an incorrect assessment of the size of the world at that time. This made Columbus believe that the Asiatic continent was larger and closer to Spain than it was in reality. This anyhow supported his motivation to sail westbound.

Columbus however realized that such an ambitious expedition as he proposed could only be achieved by royal patronage. This he sought from the ruling monarchs in Portugal, Spain, France and England. In the end, after much rejection, he was supported by Isabella and Ferdinand of Spain. As a result of this much of the New World went to the Spanish rather than to the English.

So what can we learn from this? First comes market survey, than funding, than feasibility study. Simple isn't it? But still valid today.

5. Market survey

"Market survey is making a systematic approach for opportunities, to provide us with a picture for prospect in a future economic environment."

This comes from one of the guru books on strategic decision taking, but the principles are equally important for both the entrepreneurial and intrapreneurial inventors as well as for the hobby inventors.

No set of searching and selection procedures will guarantee that we will find the best possible opportunity. We are looking for a procedure which gives a high probability of finding some very good prospects and to avoid prospects that are poor. The basic method is to study the scientific, social, economic and business trends that are creating such opportunities. This is crucial for mass-markets and consumer marketing in particular, but also for industrial and institutional markets.

The sort of things that are relevant are, among others (the enumeration is not exclusive):

A. Social trends

- Prosperity, education, leisure, mobility, family size, changes in roles, greater equality.

- Sociological problems: drug abuse, mental health, stress, crowding, pollution.

- Governmental control: advertising, packaging, environment, factory location, redundancy.

B. Economic trends

- Income and wealth, growth distribution between classes and regions.

- Growing and declining of industries, prices of capital, labor and raw materials, declining trades, unemployment, skills which are becoming rare.

- Competitive structure, size of enterprises, monopolies or fragmentation, shorter product life cycles, role of pricing, advertising and design.

C. Scientific and Technical trends

- New ingredients and materials, new tools and processes.

- New forms of transport (containers) and communication (internet).

- Impact from life sciences, biotechnology, medicine, behavioral sciences.

D. Business Methods

- Professional techniques in marketing, organization, production control, logistics (just-in-time), administration.

- Distribution trends, cash-and-carry, door-to-door selling, contract merchandising.

- Developments in market research, product testing, pricing, advertising and packaging.

- Decision making techniques.

It is important for every inventor to think out his own list. Evidently an inventor of a birth control method will be more interested in social-economic and scientific trends than in business methods. However the basics behind market survey are equally important for every inventor:

Get to know your market from the point of view of your potential customers.

Why is that so important?

Unfortunately many inventors nowadays still look at their markets in the same traditional way as companies did in the past. Many inventors (like companies did until the 60's) are convinced that superior properties of their product will beat their competitors of the market. A good example of that is the quality aspects companies put into their products in the past. Many products like vacuum-cleaners, radio equipment, bicycles and even cars (Borgward in Western Germany) were made to last forever. They did indeed, but many of the factories producing those no longer exist.

Today the business world has accepted that the planning of companies and the needs of consumer do not run in parallel. The misery in consumer electronics and, in particular, the clothing industry are good examples. Therefore, one must carefully study the market in order to arrive at potential opportunities. This is done by market survey.

The basic principles behind market survey are as follows:

1. Study all possible aspects of a given problem.

2. Collect data and analyze all possible aspects of the marketing of a certain product (the invention).

3. Collect data and analyze all possible aspects of the sales and distribution of that same product.

In this way we may get a clear view of the so-called marketing instruments (also called the 4 P's)

- Product (what actually do we want to sell),

- Price (at what price do we want to sell),

- Promotion (how will the product be advertised), and

- Place (which route of distribution do we select).

The way in which the necessary data must be collected will differ, depending on the type of product and the objectives one has set oneself. Most important, however, is the budget one may spend on this exercise. Usually this is a key problem for inventors, in particular for those who are entrepreneurs.

Basically one can distinguish the following aspects of collecting data:

1. The place where they are collected:

    - desk-research (official libraries or Internet are cheap sources),

    - field-research.

2. The moment when data are being collected:

    - ad-hoc (to solve an initial or acute problem),

    - continuous (e.g. post marketing surveillance of drugs, which is expensive of course).

3. The method which is being used to collect data from the field.

    - Observation: watching potential customers using current products (not necessarily expensive if you trust your own eyes in shops or at home).

    - Interview: either personal or via telephone or mailing.

    - Experimental use: a prototype of the product in its market environment.

All this data collection can be done either on a qualitative or on a quantitative basis. This has to be explained further.

Qualitative market survey concerns all forms of market survey that aims to reveal all aspects of introducing a new product. This type of market survey is, therefore, particularly important for inventors. Typical features of qualitative market survey are:

- historical context,

- literature search,

- open interview or in-depth interview,

- group discussion,

- expert interview (with opinion leaders).

Quantitative market survey is the next logical step after a qualitative market survey. Common forms of quantitative market survey are desk-research, ad-hoc interviews, continuous research and test-panels. In market survey observations and experiments can be both qualitative and quantitative.

Bottom line difference between qualitative and quantitative market survey is the difference in numbers. For quantitative market survey many more observations have to be done. This has to be done for each of the above-mentioned marketing instruments in order to arrive at a:

- Product strategy (product-concept test, blind product test, packaging test).

- Price strategy (try-out selling, minimum-maximum price).

- Distribution strategy.

- Advertising strategy.

Therefore, real quantitative market survey is out of reach of inventors. It is a marketing instrument that should be left to companies active in the exploitation of an invention. Very often even those companies leave this to specialized market survey organizations (such as, Nielsen).

So what remains for the inventors is the qualitative market survey. Bottom line question is how do we collect our information?

In fact we can identify two basic sources of information:

- Available information, and

- Collectable information.

Available information can either come from figures we have already for similar products or from official sources, statistical handbooks published by national governments, international organizations (such as, UN, WHO, WIPO, FAO) or from commercial organizations (Frost & Sullivan).

Collectable information can come from our own activities, such as:

- interviews,

- observations, or

- experiments, also called feasibility studies.

This last type of market survey is obvious very suitable for inventors and, therefore, the subject of the last part of this presentation. The possibilities of a feasibility study are, furthermore, highlighted by a recent case study for Roentgen (X-ray) equipment.

6. Feasibility studies

It is one thing to collect relevant facts. It is quite another to use them effectively and to show where opportunities lie. In order to do so we must organize data in a certain way, which is as follows:

- First of all we must select key trends and make generalizations
  (e.g. consumers earn more money and have more free time).

- Then we must formulate a hypotheses
  (e.g. consumers will spend more money on hobbies).

- Finally this hypothesis should be challenged
  (e.g. there is a growth market for Bonzai trees).

For the inventor the challenge of a hypothesis can be best done via a feasibility study. A prototype or a working model can be placed in a consumer environment and all aspects of it's performance and consumer acceptance can be observed.

This particular aspect of market survey can be best highlighted with a practical example, which is the Knobless Roentgen Projection Control.

In Roentgen (X-ray) diagnosis we distinguish two basic principles:

- Roentgen (X-ray) photoscopy.
  A fixed array between a Roentgen (X-ray) tube and a photographic plate. This array is used in traumatology or on a smaller scale, for example, by dentists.

- Roentgen (X-ray) fluoroscopy.
  A movable array consisting of a Roentgen (X-ray) tube connected via a C-arm with a photomultiplier. This array is used for continuous fluoroscopic investigation of the digestive tract (colon) or of the small blood vessels around the heart or in the brain (angiography).

The key problem in fluoroscopy is to manipulate the array, a heavy metal frame with Roentgen (X-ray) tube and photomultiplier, around the patient and to look for small objects in a 3-dimensional background. For example, the radiologist has to discover tumors of about 5 mm in size, in a 2 meter colon, which itself is bent.

The actual difficulty for doing that is caused by the way such heavy and difficult equipment is manipulated. Simply, would you believe it, by push buttons and joy-sticks. Imagine a pilot landing an aircraft in that way.

A Dutch radiologist, Dr. Ploem, a man of great experience in his profession and inventor at the same time, did not want to accept this situation.

He invented a master-slave configuration for Roentgen (X-ray) fluoroscopy which consisted of a little scale model of the unit, a processor and an industrial robot on which the Roentgen (X-ray) equipment was mounted.

As he presented his invention to a major manufacturer of Roentgen (X-ray) equipment, people in this company were interested but did not dare to decide immediately on introducing this concept. In fact, some people in this company even argued that their competitors would enjoy and capitalize on a possible failure of this new concept.

It was then decided to build a working model of this new concept and to conduct a feasibility test with it on a major Roentgen (X-ray) equipment exhibition. In order to make this feasibility test as unbiased as possible our team funded a small “alibi” company, Radiologists New Developments (abbreviated “RND”) and this very company hired exhibition space in-between the big competitors (one of them being our “patron”).

A large number of experts from all countries were invited to play with the new concept in our exhibition stand. We also subjected them and other visitors to interviews, both structured (the by-passers) and open (the experts). Of course our sponsoring company had briefed us which experts to invite.

Many visitors indeed came and enjoyed using the new concept. Not only were they experts and users of today’s Roentgen (X-ray) equipment. But also many managers and development people from the large Roentgen (X-ray) equipment companies came to see us. Funnily enough this included employees from our sponsoring company, who did not know that their own bosses were behind this concept. Their enthusiasm was gratefully incorporated in the end result of the feasibility study.

Altogether we were able to compile a nice and comprehensive market survey report for our sponsoring company, at moderate costs and with a great predictive value. It could never have been done the official way.

7. Conclusions

Market surveys and feasibility studies are prerequisite for exploiting inventions.

Inventors, in particular those working on their own budgets, have limited resources and can spend little or no money on market surveys. Yet a lot can be done with little means and a small budget.

The bottom line scenario for identifying opportunities is:

- To select key trends from generally or easily available data and to make generalizations,

- To formulate a hypotheses, and

- To challenge this hypothesis, for example via a feasibility study.

This scenario is no revolution but an essential methodological approach. Remember, Columbus did it the same way and look where he got to.

[End of document]