



Time is money – quality is money

Quality research in logistics chains

By Jan Hembach, Quotas

International competitive pressure in the postal sector pushes logisticians and postal operators world-wide to constantly improve their production processes.

A faster and high-quality production creates, in many respects, indispensable competitive advantages for the merging of markets in the context of globalisation and for the opening of the respective national markets to rival businesses.

The international market for logistics services is shaped by high pressure for companies to adapt. The companies have to find their way in a market, in which both national as well as international legislators set the conditions of the general requirements. In order to implement the legal requirements, organisations have been formed at different levels that establish the rules for international postal traffic. These organisations are multilateral and are subject, in part, to government supervision.

Central points of the regulations, which are established by legislators and multilateral organisations, are matters of price and quality. These questions are, therefore, of greatest relevance to the companies concerned.

At the same time, the environment of the companies is changing to the effect that anti-trust laws are succeeding in continually loosening existing monopolies. This results in unfamiliar competitive situations on domestic markets in which market shares are competed for. The main weapons of the competitors are price and quality.

The (former) monopolists certainly have the better cards in the emerging price war. Knowing this, governmental regulatory bodies have been established in many European countries that should provide for fair competition. In the new competition, new companies, often private companies, emerge at lightning speed and spread out in lucrative niches of the overall market whilst also striving for growth. Due to the fact that the new market participants come into the market lean and specialised, they can, as a rule, gain price advantages for themselves. On the other hand, they do not possess the logistics knowledge or the means of the former monopolists who, as a result, have advantages with regard to quality. Both are motivated to develop their strengths and to minimise their weaknesses. The outcome of this race is, furthermore, open and serves as a basis to determine how successful the companies are in streamlining and improving their services.

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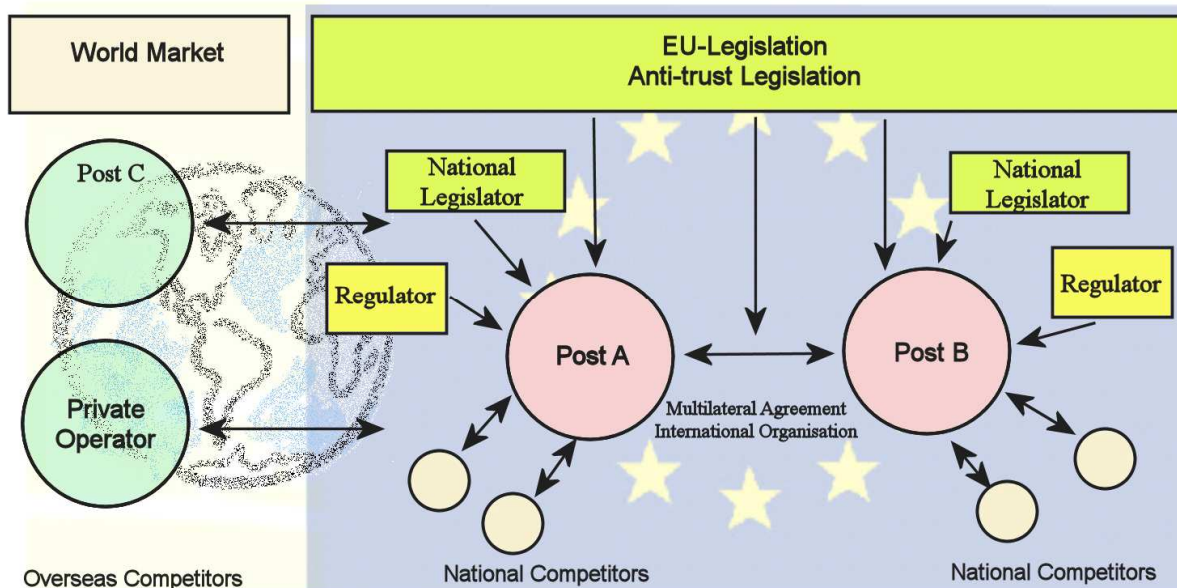
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For all former monopolists it is regarded, however, that growth is not achieved on the national market but on foreign markets. Subsequently, acquisitions are to be frequently encountered within the sector. And when an acquisition is not possible, a co-operation partner is sought at least for all important markets. One outcome is that the big players of the logistics market are active in practically every important submarket, either with subsidiaries or co-operation partners.

The resulting strategy of external growth, however, involves a series of risks.

How can one find out what quality my prospective co-operation partner or my prospective subsidiary has? Without having answered the question regarding quality, no purchase price can be assessed.



Market factors in the logistics sector

The total of the mentioned factors pushes the market participants, regardless of whether they are a former monopolist or private newcomer, to make considerable efforts in the area of quality research.

An important basic instrument for quality research in the logistics sector is the use of panels. This generally involves private individuals who have agreed, for the longer term, to take part in studies of quality research. Since the panel participants have to be incentivised and require continuous education and mentoring, they are generally mentored in special market or quality research institutes. The quality of the results of the quality research hinges upon the quality of the panel used. However, a high-quality panel cannot conceal the fact that the panel participants are people who can also make mistakes.

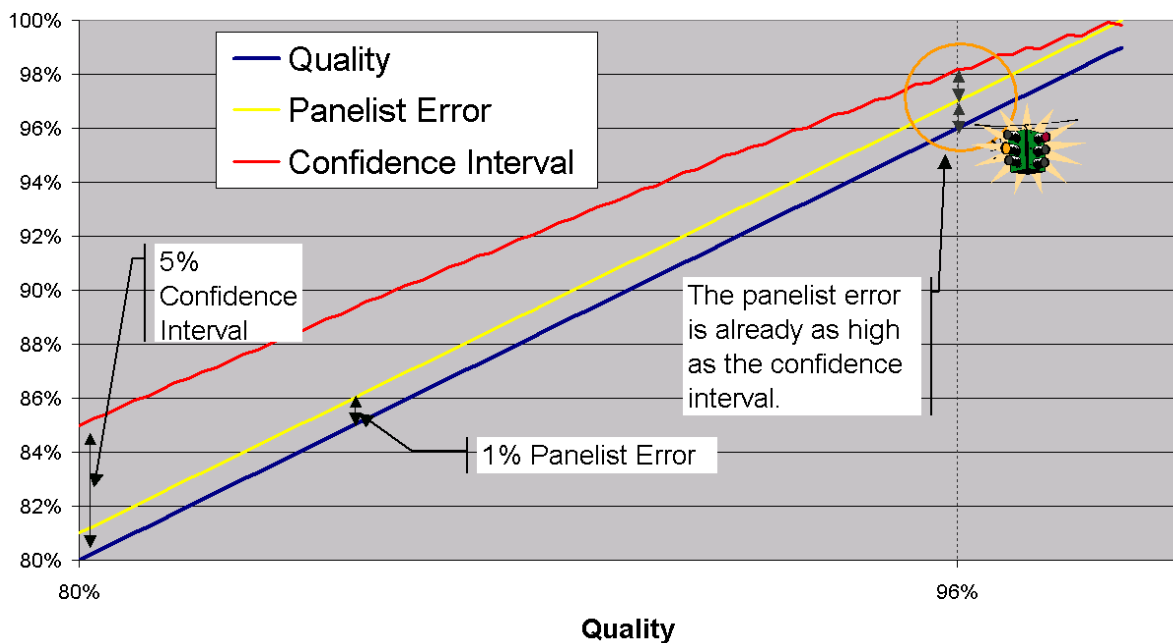
The human factor in quality research

When the collected panel data form the basis for business decisions, the highest demands must, however, be placed on the validity of the data. Meanwhile, the high level of service quality in the logistics sector makes validating the panel data difficult. Over the last 10 years, the targeted use of quality research was the basis for a rapid increase in quality within the entire sector. This drastic increase led, however, to errors gaining ever more importance when collecting data through panelists. An error rate of the panelists of 1% at a quality level of 80% naturally has distinctly less impact than the same error rate at a quality

level of 95%. At the latest, when the error rate of the panelists approaches the magnitude of the confidence interval of the measurement data, the validity of the collected data is jeopardised.

The following example diagram assumes a panelist error rate of 1%. At a quality level of 95% (corresponding to a 5% quality error), the constant error of the panelists already accounts for approximately 40% of the total confidence interval that, in this example, had been selected with 5% with regard to the quality level of 80%. At a quality level of 97%, the panelist errors already account for 50% of the confidence interval. As a result, the collected data are no longer suitable for making business decisions since the actual quality errors are overlaid by the panelist errors.

Confidence Interval and Panelist Error



Confidence interval and panelist error

In order to avoid this situation, the validity of the data must be re-established. The reduction of the panelist error required for this is, in practice, hardly possible since it involves errors related to human nature and thus cannot be excluded. If the human factor cannot be reduced, the use of technology can be used to exclude it to the greatest possible extent.

RFID and sensor technology: Quality assurance for quality research

In order to also ensure the quality of the data collected by panels at a generally high quality level, RFID methods and procedures can be used.

The use of transponders in quality research represents the transition to the automatic collection of quality data. In practice, panellists still send each other test letters and make note of the sending and receiving data. Transponders that automatically record the individual points of the logistics chain additionally accompany the test mailings. There are different types of transponders suitable for such measurements.



Passive transponders of type UHF Class 1 Gen. II:

Passive transponders are primarily characterised by their affordable price. This is due to their widespread use and to the fact that passive transponders do not require batteries. Both the transponders and the reading devices may be obtained from many different manufacturers. They are standardised according to various ISO specifications and are used for the most varied applications.

Active transponders:

The active transponders used are generally application-specific. That is to say that they are not mass-produced and are thus relatively expensive. Due to their battery the lifetime of the transponders is restricted. Due to the high price, as a rule, their use is worthwhile only when they can be re-used.

Acceleration sensors:

The technology for acceleration sensors has made great strides in recent years. Sensors are available today that are only a few millimetres in size and have an extremely low power consumption. This enables the production of special test letters that record accelerations occurring during transport. Special software can subsequently analyse acceleration curves. This makes it possible to determine how the letter was transported and when it was delivered. Acceleration sensors are very expensive. Their use is worthwhile only when they are frequently re-used. By using mobile radio technology (GSM), an almost real-time processing of the obtained data is possible.

Note that for each concrete question, a specific transponder technology is preferred. Every problem has its own individual solution.

This physics-based feature of RFID and sensor technology has so far unfortunately led companies to avoid investing in RFID technologies. No security with regard to investment and future exist. However, the situation has changed since this year. With the development of the QuoTrax[®] product line, the company Quotas from Hamburg, Germany could, for the first time, establish a system on the market, with which the entire logistics chain can be measured. The QuoTrax[®] system is modular and obsolescence-proof. Another decisive step for providing security with regard to investment of the QuoTrax[®] system is the marketing model that is aimed at renting instead of purchasing. This offers a high degree of security with regard to investment. When, for example, the biggest problems at the moment are to be looked for on the last mile, all available resources can be used for this without future obligation. When perhaps in a few years problems occur on the first mile, the readers/transponders of the last mile can be easily exchanged for those of the first mile.



The QuoTrax[®] products are available both for passive as well as active transponders. Regardless of which type of transponder is decided upon, it is important that the QuoTrax[®] products enable automatic measurements to be carried out along the entire logistics chain.

- in post-boxes on the street
- in the sorting centre
- at delivery points
- in residential letter-boxes

All types of transponders commonly used in the postal sector can be used for the measurement.

- Passive UHF transponders of type Class 1 Generation II
- Passive HF transponders certified to ISO 15693
- Active transponders of type PT30, PT23, PT21, ...
- Active Multiponders[®] PT23E

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