TESTING SERVICE PRICING PROTOCOL FOR TEST-4-SME

WP 5.1. RESEARCH SUMMARY ON IDEAL PRICE-POINT OF SERVICES

Draft Version

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Representing the project partner Hochschule Wismar, University of Applied Sciences: Technology, Business and Design, herewith we would like to express by thankfulness to the project Lead partner, who believes in our institution and has granted the access to TEST-4-SME partnership. We hope to continue our fruitful cooperation in the future. Our gratitude also goes to the partners and their contribution in the frame of provided information that was incorporated in this study and served for further the matic digging. A big thank also goes to project stakeholders and target groups – electronics producing SMEs and academic institutions in the Baltic Sea Region, in particular, for fruitful discussions, exchanged and shared practices and experiences as well as hints given.

This study is funded by the European Union and therefore the access is granted to everybody, who shows interest in testing services.

1. Introduction

This report develops the pricing methodology for the collaboration between laboratories of the TEST-4-SME – “Laboratory Network for Testing, Characterisation and Conformity Assessment of Electronic Products developed by SMEs” network, who provide testing services for electronic components producing companies within the Baltic Sea Region (BSR) and beyond. The results are detailed recommendations in form of a systematic pricing protocol that includes estimates of administrative and technology costs for the implementation of sustainable laboratory testing services among TEST-4-SME partners within the BSR. The discussion focuses on the procedure and provides guidance for the partnering laboratories regarding pricing of testing services.

The protocol document may be viewed as an objective but controlled dialogue between the TEST-4-SME consortium, the electronics and electronic equipment producing companies and other various interest groups. In addition, the implementation and refinement of this work would require an understanding of the protocol impacts on the business atmosphere across Europe. The protocol is not inclusive of all transactions neither is it permanent, rather it may be limited to specific years, specific partners, specific services, and most importantly specific affiliate transactions.

2. Motivation

The TEST-4-SME is a network of an innovation support system that provides testing services and consultation for especially electronic products producing SMEs on how to demonstrate and secure conformity with international standards and in particular during early product development. Thus, one of the objectives of the project is to ensure successful early stage testing for SMEs within the member states of BSR in order to avoid failures in later product development stages in order to safeguard cost-effective start-ups and product launching. This means that electronics producing companies must be able to access all TEST-4-SME services easily at any time without having to deal with the complication of where or when their tests are done.

TEST-4-SME presents a united platform to the public, so that the public see and recognise the network as a single point of solution provision to major electronic testing needs across the BSR. Hence, all available testing services are visible on the network platform as well as the necessary contacts for needed services (cf. http://www.testelectronics.eu/). One major hurdle can been seen in the circumstance that the laboratories are from different countries so that they offer their testing services at different prices – even when they are from the same geographical region, they still offer different testing services at different prices. To meet specific objectives of the consortium, and within the content of factors that influence pricing decision, the partnering laboratories within the TEST-4-SME network need to adopt a standard pricing method and strategy that can be easily obtainable by their clients irrespective of which such order is made.

At first, it was the desire of the project partners to adopt a common pricing strategy that is fair and suitable for all partners, so they pursued an ideal pricing point within a range where all partners could set their testing prices. However, after closer examination, the members realised that even though conflicts between countries over

standardised prices are common[1], trying to standardise the different pricing approaches of different countries will leave the consortium vulnerable, increase unhealthy competition intensity and reduce service market sophistication. Most importantly, it poses a threat to the future and sustainability of the network.

Thus, after several consultations and deliberations, the partners concluded that, regardless of the potential conflict that could arise, acceptable and agreed standard testing prices would have been achievable only if market conditions are the same for all countries. Thus, the bespoke standard pricing cannot be set especially when the specifics of the industry in each countries are brought to account.

Therefore, regarding the situation at hand, it is important to understand the diversity of the member states, the testing lab partners and the institutions involve especially their business environment, business practices, distribution structures, and the peculiarity of the market affecting the test costing and pricing of each services[2]. Although competition intensity plays a significant role with respect to standardised product/service pricing[3], this situation this time can be described as: *hypotheses non-Fingo*.

[1] See Nielsen, J. M. Advance Pricing Agreements: The What, Why, and How from the Valuation Analyst Perspective. Insight. www.wilamettee

[2] In Solilová, V. (2014). Transfer pricing rules in EU member states. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, *58*(3), 243-250.

[3] Also Guilding, C., Drury, C., & Tayles, M. (2005). An empirical investigation of the importance of cost-plus pricing. *Managerial Auditing Journal*, 20(2), 125-137.

However, Test-4-SME desire to remove price discrimination between partners who are from different countries under different market conditions and seek for a strategy that would attract other labs with established market positions. As already established, competitive conditions for even the same products within the same country are very different and plus often are subject to different conditions within the same entity, whereby even more variety is faced in case of different countries[4].

TEST-4-SME further seeks to overcome the major hindrance to cross-border transactions in such situation where a potential electronic company would need a service outside its country or acquaintance, a circumstance that requires service transfer within the group because the requested test is beyond the competence or service portfolio of the contacted laboratory.

Cross-border transactions usually adapt two strategic stances; they either ignore unhedged risks to reducing unnecessary loss or embrace a cutting hedging of business transactions for maximum profit[5]. Accordingly, to hedged future profitable transactions, TEST-4-SME consortium develops a strategic pricing tool to[6, 7]:

[4] See Yamakawa, H. (2007). A Practical Analysis of Transfer Pricing Methodologies for Bilateral Advance Pricing Arrangements.

[5] Tellis, G. J. (1986). Beyond the many faces of price: an integration of pricing strategies. *Journal of marketing,* 50(4), 146-160.

[6] See Li, L., Lin, X., Negenborn, R. R., & De Schutter, B. (2015, September). Pricing intermodal freight transport services: A cost-plus-pricing strategy. In *International conference on computational logistics* (pp. 541-556). Springer, Cham.

[7] Nielsen, J. M. Advance Pricing Agreements: The What, Why, and How from the Valuation Analyst Perspective. Insights www.wilamettee

a) Decrease the burden of each partner for openness and fairness,

b) Provide clarity to the appropriate pricing method to be used in any collaborated transaction and,

c) Foster a better cooperative business relationship among the laboratories in BSR.

Since it is the goal of TEST-4-SME to ensure collaboration and ultimately agree on the appropriate procedures for valuation of services, maintain pricing neutrality and ensure that partners are not pitched in an unfair competition among each other (regardless of their region and countries), this document may be adopted as a legally binding agreement among current and future laboratory partners.

3. Pricing Methodology

A pricing methodology is used to decide the cost for a product or service. Past research had looked into pricing methods and strategies. For example, Oxenfeldt[8] defined pricing methods as the "explicit steps or procedures by which companies make pricing decisions." Later, Tellis[9] described a pricing strategy as a deliberate decision made from different possibilities. Its major objective is to earn maximum profit in relation to organisational position[10].

Generally, it is recommended to apply relevant approaches of cost analysis before a company starts to make pricing decisions. Moreover, Lucas and Rafferty proffered[11] strategies to remove complication of uninformed pricing where there is a lack of consensus agreement in implementation of unilateral prices. Going forward, TEST-4-SME provides a closer examination on the requirement to develop implementation guidelines for service pricing. So far, privacy and technological feasibility do not seem to be major issues but cross-border cooperation and implementations of issues related to service costing and pricing.

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[8] Oxenfeldt, A. R. (1983). Pricing decisions: how they are made and how they are influenced. *Management Review*, *72*(11), 23-25.

[9] Tellis, G. J. (1986). Beyond the many faces of price: an integration of pricing strategies. *Journal of marketing*, *50*(4), 146-160.

[10] Assael, H., & Sandler, D. (1985). *Instructor's Manual for Marketing Management: Strategy and Action*. Kent.

[11] Lucas, M., & Rafferty, J. (2008). Cost analysis for pricing: Exploring the gap between theory and practice. *The British Accounting Review*, *40*(2), 148-160.

There are different categories of pricing methods, which are classified based on the objective of companies. These are cost based (Cost-plus method, contribution analysis method, target return pricing, break-even analysis and marginal pricing); competition based (pricing similar to competitors, pricing above competitors, pricing below competitors and pricing according to the dominant price in the market); demand based (perceived-value pricing, value pricing, pricing according to the customers' needs)[12].

The TEST-4-SME pricing methodology focuses on cost-based methods and in particular, *the cost-plus method* where a profit margin is added to a service's average cost. The reasons for this choice is not farfetched: Apart from the aforementioned market conditions, the diversity of sophisticated lab testing services and equipment makes it difficult to develop standardised pricing policy for all partners.

Oxenfeldt[13] explained that pricing objectives provide directions for actions. In other words "to have them is to know what is expected and how the efficiency of the operations is to be measured". However, all laboratories are within their legal rights to pursue profitable ventures. Hence, when they belong to the same group of similar interest within the same market, pricing ceases to be a simple matter. Furthermore, a lot of connectedness intertwines environmental factors and geographical location in the light of the general market conditions such as state of inflation or deflation, government policies and laws, the capacity and facilities available in the industry or in

[12] Feinschreiber, R., & Kent, M. (2008). Transfer pricing developments in the European Union-part III: Advance pricing agreement guidelines. *Corp. Bus. Tax'n Monthly*, *10*, 23.

[13] Oxenfeldt, A. R. (1983). Pricing decisions: how they are made and how they are influenced. Management Review, 72(11), 23-25.

a particular country, the level of taxation and lastly, the economic state of the country.[14] This regrettably, is a recognisable situation within the TEST-4-SME.

Accordingly, the cost-plus oriented pricing approach sets a service pricing protocol based on all the costs plus a desirable profit margin[15]. Recognizing that a neutral pricing methodology is a potential strategy that can be used to ensure the sustainability of the partnership arrangement and future services cooperation, a thorough review of its implementation was carried out with a set guideline to ensure fair operational activities among its members. By integrating and coordinating the prices of different testing services through an efficient protocol system, an efficient use of and access to the infrastructure available in all member states is thus made possible.

[14] Akintola, A. S., & Skitmore, R. M. (1990). Analysis of UK Tender Price Level. *American Association of Cost Engineers (now called AACE International, the Association for the Advancement of Cost Engineering International)*.

[15] See Dearden, J. (1978). Cost accounting comes to service industries. *Harvard business review*, *56*(5), 132-140.

4. Protocol Assumptions

Using directions of different recent and recognised pricing methodologies,[16, 17] critical assumptions that guides the protocol of the proposed pricing method in principle are set. Accordingly, the protocol assumptions taken into consideration as guidelines among TEST-4-SME partners include the following:

I. The agreement between TEST-4-SME partners is subject to terms that are fair to all parties. All members must assume a commitment and adherence to the protocol.

II. A laboratory that directly receives an order from a company/client is referred to as the ***contractual lab***. When the work is passed onto a different lab in the TEST-4-SME network for an intending service, the lab that carries out the actual service is referred to as the ***sub-contractual lab***.

III. This methodology works for determining "off-line" prices, which means that the contractual lab determines the tests needed to be carried out as well as the services price and will determine all testing demands during the planning period.

[16] Li, L., Lin, X., Negenborn, R. R., & De Schutter, B. (2015, September). Pricing intermodal freight transport services: A cost-plus-pricing strategy. In *International conference on computational logistics* (pp. 541-556). Springer, Cham.

[17] Avoseh, O. O. (2014). *An empirical evaluation of the advance pricing agreement process in the UK* (Doctoral dissertation, University of Glasgow).

IV. All testing laboratories have different targeted profit margins for different types of testing services and these profit margins are pre-set by all laboratory partners according to their marketing objectives.

V. Although prices can be considered fixed, in the end they are proportionate to the services requested and rendered. The factors (i.e. type of test, timeline, etc.) that influence prices of services are the same factors that influence estimation of the risk therein. For each partner, the given procurement system put in place in their various laboratories will determine the contractual relationship between them and their contractor or sub-contractor as the case maybe. Wherein the procurement guideline becomes a working document in principle for this protocol.

VI. Each testing service price is determined and charged at the moment when the test results are obtained. If substantial changes are to be introduced into the ordered test which were not taken into consideration, this should be communicated with the customer. This should lead to a new price agreement or to a revision of the order. The different values for the categories of the tests carried out in each laboratory are used for each transaction.

VII. The contracted lab charges and receives payment for the work done and pays the sub-contracted lab accordingly (ref: procurement docs).

VIII. For any testing service offered, there is a market price and this market price is made official. For the partnership pricing protocol, this is referred to as the ***operational costs*** in the quoting document and should not be higher than the originally known official testing rate in the sub-contractual lab.

IX. For contracted lab testing services, the targeted ***profit margin*** will be smaller than the operational cost of the contracted test lab partner. The reason is that,

the sub-contractor carries out the main service thus the contractor will have less space for profit. The profit margin will be set within a range, for example 1 to 5% of the operational costs. This could also be inclusive of all transportation costs within each single transaction. If there are very different price levels between the country of the contractual lab and the sub-contractual lab (especially when prices are higher in the country of the sub-contractual lab), there might be difficulties implementing this strategy, because it is possible, that only the operational costs of the expensive country will be higher than the price of the test. In this case a small fee should be agreed. ***Partners within the consortium will determine and agree on the profit margin range.***

X. All transportation costs are set according to transport condition of the country where the contracted laboratory is located.

XI. The testing service price of individual order is calculated and determined according to the operational cost, transportation cost, other related cost, and the profit margin associated with it.

XII. In each situation a written agreement should be ensured directly between contractual partners.

XIII. Contracted lab must make informed calculations before the giving out pro forma invoice, as the contractor will not be able to charge extra cost after acceptance of payment. The sub-contracted lab will be paid in full.

XIV. Treating each case based on their level of urgency, the contracted lab will present the client a list of testing packages with an advised timeline. The client then chooses the testing package premium, which is most suitable for him. This will be charged for example to variable cost.

XV. Where an intending sub-contracted service is not within the competence of the sub-contracted laboratory or in the event of a long line of backlog or other arising situation, the sub-contractor is within rights to either recommend a related service sub-contractor or decline the order.

XVI. In the event of a price change, a memo of notification is served within at least a period of one month to all partnering labs otherwise contract maybe rendered invalid.

XVII. The identified critical assumptions projects a reliable method for conflict resolution. They are assumptions of all indicators mentioned above.

The cost-plus method is presented as an open and non-complex pricing method[18] that all members of the consortium can relate to as a guiding example and a reliable way of resolving arising service collaboration.

Thus, the total price for a particular contractual testing service will be:

$$\text{Total price}_{i,j} = \text{OC}_i + \text{PM}_{i,j} + \text{TC}_{i,j} + \text{VA}_{i,j} \quad (1)$$

Where:

[18] Also Yamakawa, H. (2007). A Practical Analysis of Transfer Pricing Methodologies for Bilateral Advance Pricing Arrangements.

- ***I*** - is the specific service provided
- ***j*** - is the specific clients
- ***OC*** - is the operational cost (OC) at the market price of the test offered.
- ***PM*** - is the mark-up (profit margin) fixed as a percentage of the operational costs
- ***TC*** - is all transportation costs including packaging services needed for delivering the product
- ***VA*** - is other costs known as variable adjustment (VA) costs added according to arising situations. An example of a VA is a professional service/consultation cost, cases of expedited testing services etc.

$\mathbf{VA}_{i,j} = \boldsymbol{\rho}(\mathbf{OC}_i)$, where $\boldsymbol{\rho}$ is factor that takes into account customisation of $\boldsymbol{service}_i$ and $\boldsymbol{client}_j$

Arguable, the cost-plus method does not put into account the maximum price the client is willing to pay, however, considering the fact that TEST-4-SME network sustainability and the SMEs cost-effectiveness is based on available and accessible services that otherwise would have been time consuming or nearly impossible, the pricing method offered is optimised in a business sense. As reported in the "report on gaps in testing services" from HSW (PP8), some testing equipment is scattered in the region (i.e.

technological gaps) and the related demand for individual testing services varies. Opening facilities up to more SMEs will ensure better use of existing infrastructure. Consequently, if network-testing services become more popular among SMEs, laboratories in turn are able to lower their services prices because of increasing demand and thus, sufficient continuous income.

5. Case example

Theoretically, the following concepts can be considered to determine the costs for the transnational services offered by the members.

Service-Design-Approach	The service design approach is about designing the functionality and form of services from the customer's perspective. The designed service interfaces should be usable, useful and desirable for the customer, but from the perspective of the provider they should be efficient, effective and different. Service design is made up of three concepts: problem analysis, idea development and idea evaluation. When developing and designing a new service, you should work with the customer on an interdisciplinary basis in order to rule out insufficient orientation towards customer needs.[19]
Transaction Cost Theory	The transaction cost theory describes that action costs arise when different entities interact with each other during a value creation process. It is assumed here that depending on the number of instances involved, more costs can arise. The transaction costs consist of the following: - "Initiation costs - Agreement costs - control costs - adjustment costs - risk avoidance costs."[20] If it is assumed that transaction costs exist, then these can justify the existence of companies. Considering the costs of information and the negotiation of contracts, these are seen as an efficient form of coordination, since they are superior to the market price mechanism in terms of lower marketing costs, especially for repeated transactions.[21]
Porter's Five Forces	The Five Forces model goes back to Porter and is an instrument of industry structure analysis. This model describes five relevant competitive forces that significantly influence the attractiveness of an industry. The profitability of the industry depends on how

[19] Vgl. Leimeister (2012), Dienstleistungsengineering und -management, p. 163 f.
[20] Kühnapfel (2017), Vertriebscontrolling, p. 346.
[21] Vgl. Kluckert (2011), Akzeptanz standardisierter Dienstleistungsverträge. p. 38.

	strong the individual competitive forces are. The five powers described by Porter are: - "potential and new competitors, - buyers, - replacement products, - Suppliers as well - Competitors in the industry. " The industry structure is described by the competitive forces, which in turn influences the strategic behavior shown by the companies in the market and thus their success in the respective industry.[22]
Cluster Theory	The cluster analysis is used to summarize unmanageable quantities of objects in groups and then to treat them uniformly. The aim here is that the objects that are located within a group (cluster) are homogeneous with regard to the characteristics considered, but that the clusters clearly differ from one another. For this purpose, the first step is to define the characteristics by which the similarity of the objects is to be determined. In a second step, clusters are then formed; this is usually not done by calculation, but by combining points that are close to each other. As a result, target groups are available that can be treated homogeneously with regard to the characteristics considered.[23]
SWOT-Analyse	The SWOT analysis is an instrument that is used to analyze the strengths and weaknesses of a company and to assess them in connection with the respective market environment. For this purpose, the strengths and weaknesses of the company (S = Strengths, W = Weaknesses) are combined on the one hand with the opportunities and risks of the environment (O = Opportunities and T = Threats) on the other. Overall, the strategic situation of the company is presented and it can be shown whether there is a need for action in the development of new strategies or the revision of existing strategies.[24]
Benchmarking	A benchmark is a measure of comparison for one's own actions. In benchmarking, for example, own products or services are analyzed and a comparison is made with other companies. Ideas for improving one's own activities can be derived from

[22] Vgl. Buchholz (2013), Strategisches Controlling, p. 171.
[23] Vgl. Kühnapfel (2017), Vertriebscontrolling, p. 72 f.
[24] Vgl. Dillerup und Stoi (2013), Unternehmensführung, p. 230.

	this. The benchmarking takes place once or as a continuous process. If a performance gap is identified between one's own company and the company that provides a clearly superior performance, measures to close this gap can be developed.[25]

[25] Vgl. Kreutzer (2018), Toolbox für Marketing und Management, p. 132 f.

6. Conclusion

Guidelines are important to ensuring transactional partners value accountability over profitability. In this work, the cost-plus-pricing strategy is used to determine the pricing protocol for transnational testing service collaboration within the TEST-4-SME network.

The protocol does not constitute a fool-proof-ironclad-strategy but describes a conceptual model for a pricing strategy construct that can exist between partners sharing the same platform. It identifies the risks involved and proffered solution to them. It is a flexible tool that could change depending on the situation, which can be clearly spelt out between contractual parties.

The simplistic nature of the cost-plus pricing approach used gives the advantage of a useful and quick pricing method. Although its simple nature can be disadvantageous in a more complex situation, nonetheless, the complexity of the variables within the consortium warrants a straightforward and uncomplicated approach that ensures the pricing elements are not geared towards unhealthy competitiveness between the partners. The highlight is that, the pricing methodology bears no interference on how each partners set their market or local prices.

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