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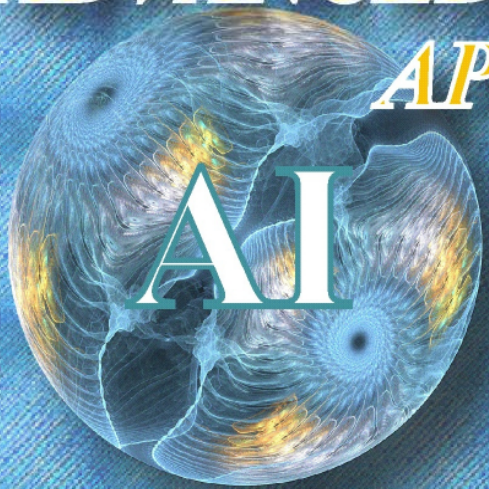

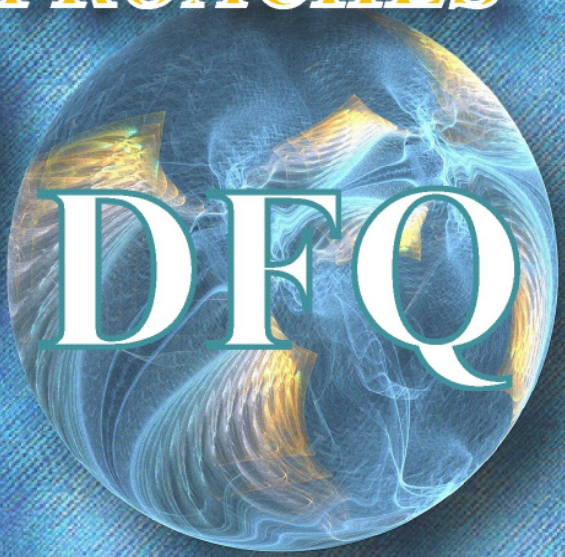

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31st May - 4th June, 2009

Belgrade, SERBIA

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Fifth International Working Conference

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Professor Dr. Vidosav D. MAJSTOROVIĆ

May 31st – June 4th, 2009.
Belgrade, SERBIA

Fifth International Working Conference

TOTAL QUALITY MANAGEMENT – ADVANCED AND INTELLIGENT APPROACHES

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Mechanical Engineering Faculty, Laboratory for Production Metrology and TQM, Belgrade, Serbia.

Note: *This Proceedings is publication science character. Ministry for Science and Technology of Serbia has financially supported this Conference.*

Technical editor: Zukan Igor, Stojadinović Slavenko, MEF, Belgrade.
Copies printed: 400
Belgrade, May 2009.

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Appendix

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IMPORTANCE OF TQM-METHODS IN THE AREA OF INDUSTRIAL SERVICES – AN EMPIRICAL SURVEY IN THE AUSTRIAN MACHINERY AND PLANT ENGINEERING INDUSTRY

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Introduction paper
UDC:331.105.423;330.12,338.658.6;35.082.4

Abstract: *This publication deals with the business practice of service, i.e. with the organisation, processes and development of services and presents a clear picture of the current situation in the industry and of the direction in which companies must develop. Industrial Services adapted to the requirements of the customers and aligned with the specifications of the physical products are becoming increasingly important for companies in the engineering industry in order to remain competitive and to ensure long-term economic success. This paper should give a general idea of what the future needs for action in these companies and in applied research are.*

Keywords: *Industrial Services; Service Development, Service Management*

1. PRESENT SITUATION OF COMPANIES

Industry will in future be characterised by increasing global competition which will make it more difficult for manufacturers to differentiate themselves from competitors simply on the basis of their products.
The service sector in engine building industry is a very important success factor for the companies with an increasing impact. Innovative industrial services are independent corporate strategies.
In these general conditions it is especially important for companies to recognise industrial service as one of the factors for success in the coming years and to undergo the transformation from just a producer to a "producing service provider"[1].
Innovation in service also offers considerable opportunities to achieve differentiation from the competition and to increase customer loyalty. On average, service products achieve higher returns than the tangible product "machine" and thus make a substantial contribution to ensuring a company's long-term success and competitiveness.

2. STUDY DESIGN

This paper is based on an empirical study in the Austrian machinery and plant engineering industry where corporate practice with regard to services is systematically evaluated and documented [2]. Also the current service landscapes in companies and the development of customer requirements have been investigated. The title of the study is "Establishing the requirements for service concepts in Austrian machinery and plant engineering". It was conducted by the Institute for Management Sciences of the Vienna University of Technology and was conducted in the period from October 2007 to May 2008.
The aim of the study was to investigate current business practices in the area of service in companies engaged in machinery and plant engineering and to identify future trends. In addition, recommendations should be given on what steps should be taken to improve service performance.
The main questions asked in the study are:

- What services does your company offer?
- What is the significance (turnover, revenues, strategy etc.) of the service area in your company?
- How important is the development of services?
- What are the future trends and developments and where do the companies see the need to act in view of these trends?

The design of the study was performed according to the principles of a combined investigation. On the one hand a quantitative investigation based on a questionnaire was carried out to achieve a higher sample size with the same employment of resources [3]. On the other hand also a qualitative investigation in form of

semi-structured interviews with selected companies was conducted to gain more detailed results [4].
The methodology in detail:

- Dispatch of the questionnaires to companies from the sectors in focus
- Follow-up by telephone
- Conducting structured telephone interviews with FMMI companies involved in machinery and plant engineering
- Conducting semi-structured interviews at selected companies in the sectorial groups.
- Study participants:
- Total number of companies contacted: approx. 700
- Response rate approx 10% (including 7 interviews)
- The focus of the survey was the machinery and plant engineering sector in Austria, which accordingly accounted for 90% of the companies polled.

3. CORPORATE PRACTICE OF SERVICE IN COMPANIES

3.1. Participants of the Survey

The corporate structure of the firms participating in the study reflects the corporate landscape in Austria where More than 60% of the employees are working in small and medium-size enterprises due to the fact that less than 1% of the Austrian companies exceed a size of 250 employees.
Therefore more than half of the responses received come from small and medium-sized enterprises as defined by the European Union (EU). 55% of the companies have a turnover of ≤ 50 million euros (SMEs), 20% are small enterprises with turnover of ≤ 10 million euros.

3.2. Importance of Service

A direct correlation between the proportion of service staff compared with the total workforce and the success of the company in the area of service (measured by the operating margin in service) cannot be established.
Figure 1 shows that on average about 9% of the total workforce works in the area of service in the companies, straight service businesses excepted.
The average turnover generated by the companies with service, straight service businesses excepted, amounts to approx. 11%. This value is towards the lower limit in an international comparison. In comparison: in Germany approx. 27% of turnover in machinery engineering is accounted for by service [5].

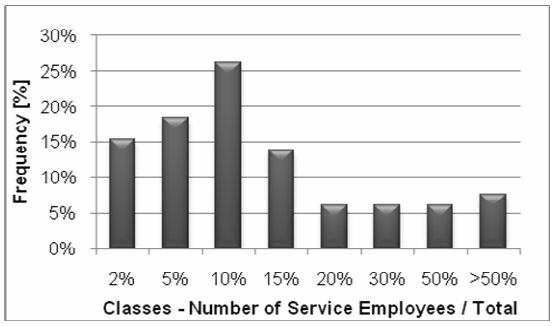

Figure 1: Number of service employees compared to the total number of employees [2]

In this context it is also worth noting that a large proportion of the firms interviewed stated that a goal of 15% was the maximum that was aimed for.
The best in this class achieve over 30% turnover with service and the worst around 1%, with the best in class having a large proportion of service employees among the total workforce.
Approximately 20% of the companies contacted in the course of the study provide no service at all.
The return on the service business is on average higher than on the traditional business with new machinery:

- Two thirds of all companies generate a maximum return on services twice as high as that on the traditional business
- 10% of companies even achieve a return on service business that is 6 times as high as that on traditional business
- The net returns that can be achieved vary within the portfolio of services offered, for example:
  - spare parts business: 10%-30%
  - training: 2%-5%

What are the prospects, in the opinion of the companies, for the development potential both for turnover and for returns on service business in the medium term (over the next 4 years)?
The majority of companies (>60%) see no or only limited opportunities for increasing turnover and returns in the area of services in the next 4 years.
60% of the companies do not expect an increase of service turnover. 30% of the companies expect an increase of service turnover of about 10% in the next 4 years, whereas 10% of the companies expect an increase of about 5%.
However, none of the companies expects returns or turnover from services to decrease,

and the expected growth rates are independent of the size of the company.
The underrated opportunities for increasing returns in the area of service suggest in part a lack of strategic direction in service.
With regard to the way services are organised it can be stated that more than 66% of the companies have their own organisation for service – in most cases within the normal organisation.
Figure 2 attempts to illustrate that for 64% of the companies service is a strategic field of business that should be addressed with a clearly formulated service strategy. However, the relatively low growth expectations show that actions are not completely aligned with strategy or that the company does not have a clear strategy [1].

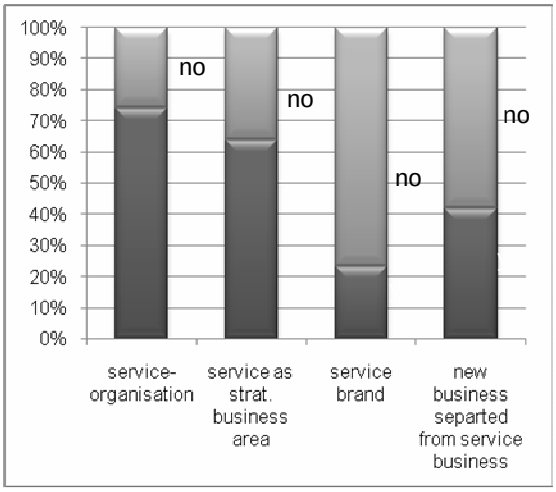

Figure 2: Organisation of services

23% of the companies run their service business under a different service brand (competitive differentiator, customer brand identification,...).
A correlation can be established between a positive response to the questions and the turnover in the area of services. Large companies thus have a more distinctive service organisation than small ones. Operating the service business under a separate brand is more likely to be carried out by larger companies.

3.3. Status Quo of Services Offered

In principle, the current range of services offered by the companies includes services, product upgrades and customer support as shown in figure 3.

- "Classic services", i.e. services characterised by low innovation, still play the main role for the companies surveyed.
- Maintenance and servicing or repairs together with the spare parts business are the most widespread services [6]
- Individual and special services are frequently neither offered as standard nor promoted but provided on an ad hoc basis in response to a customer's request.

There is a basic correlation between a company's size and the number of services it offers: large companies offer a higher number of services than small ones. No correlation can be established between the number of services offered and the success of the company (e.g. return on the service).

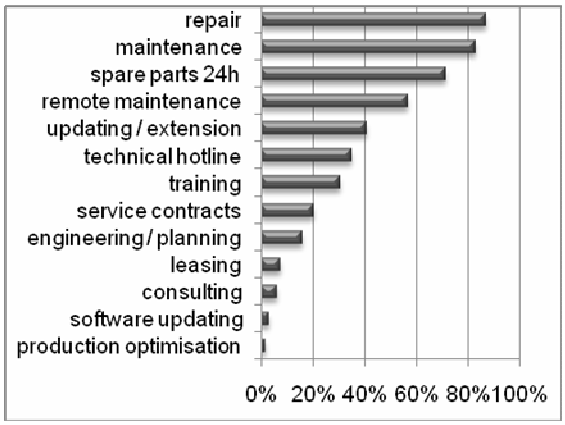

Figure 3: Services offered

3.4. Business Models

25% of the companies surveyed indicate that they offer results-oriented business models and/or operator models [7]. Here in detail the most important business model, with a share of 19%, is machine availability. TCO models (TCO – Total Cost of Ownership) do not currently play a large role for the companies (approx. 4%) and operator models are not very widespread among the companies surveyed. Only approx. 6% say that they offer operator models.
Currently, results-oriented models only play a subordinate role in comparison with the classic services.
The question regarding the three strongest selling services in the company reveals that the most frequently offered services are those which generate the highest turnover for the companies: repairs, spare parts and maintenance are the services generating most turnover for more than 75% of the companies. Only very limited turnover is currently generated with more innovative service concepts or business models.

3.5. Service Development

The most important triggers for developing new services are customer requirements and requests (see figure 4). Accordingly, most ideas for new services originate from customer enquiries. The companies are primarily customer-driven and are in particularly not proactive and innovative when it comes to developing new services. It is only the secondary answer "technical potential" that indicates that services are also developed on the companies' own initiative.

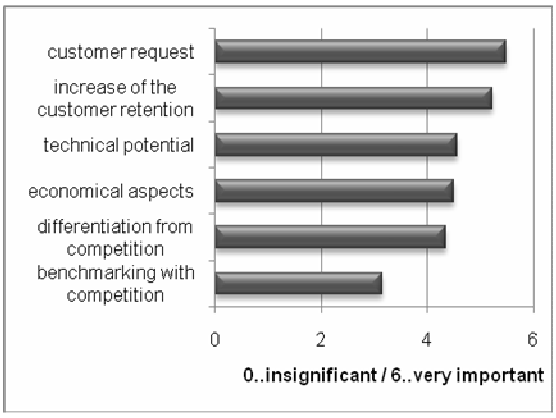

Figure 4: Triggers for developing services

In order to be able to develop services successfully it is important to have clearly defined, standardised and practiced development processes in the company that are supported by appropriate methods. In this area, more than two thirds of the companies state that they have standardised development processes with written documentation. However, a systematic methodology-based approach is not very widespread and special methods for developing services are not widely employed. When methods are used, they are split approximately equally between creativity techniques and process modelling methods.

When performing comprehensive service development there are four fundamental aspects that must be defined:

- product model – describes the scope of services
- process model – formulates the processes that are necessary to deliver the service
- resource model – determines the resource required to deliver the service
- marketing concept – specifies the strategies and instruments used to market the service

The survey results show a recognisable fundamental importance for systematic and structured service development for the companies, but the variance of the answers among the individual activities of service development is high, i.e. the companies rate this very differently.

3.6. Customer Relationship

Customer requests are the most common trigger for the development of new services. This explains why the most important sales channel for the companies is customer contact by sales representatives. Other marketing methods, apart from each company's website, play a subordinate role.

What factors make a service successful from the point of view of the companies selling it? The quality and advantages of the service are critical for its success on the market; in a similar manner customer communication is seen as an important success factor, with a well defined interface to the customer being essential.

The primary communication channel to the customer (approx. 45%) is the sales representative; less than 20% of the companies use the instrument of regular and standardised customer surveys. A well functioning complaints management process is indispensable as a part of service quality management and is underrepresented in the companies' answers (<15%).

In figure 5 the most important reasons why the companies think their customers buy services are shown.

- In the first instance it is the lack of customers' specialist knowledge that makes them have to buy services externally.
- The quality of the service is also an important reason for buying. This can be seen primarily in connection with customer retention.

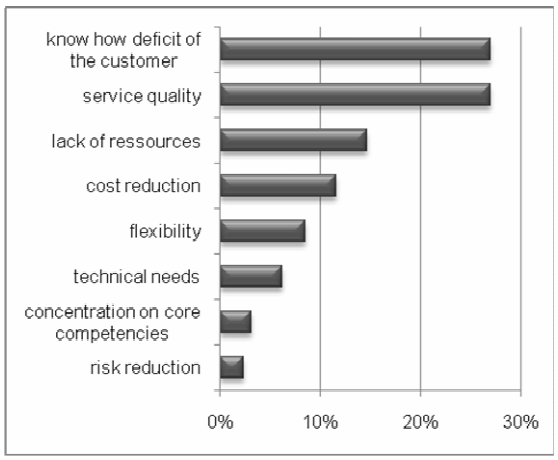

Figure 5: Reasons why customers buy services

The properties that make services attractive are:

- quality, flexibility and speed of the service
- the price may perhaps play a subordinate role but that it is still an important factor in terms of price-performance.

3.7. Future Developments of Services

The biggest difficulty that companies have to face when providing services is primarily a lack of personnel within the company that can provide services in the required quality. Other factors mentioned are the agreement on customer interface and the service organisation. In particular the poor coordination of the internal organisation and processes often leads to a potential lack of resources.
In answer to the question about which services or business models should be developed in future and which existing ones extended, the companies stated that they intend above all to intensify close customer contacts, i.e. customer care should be improved and the whole direction of the service more closely aligned with the customer (Figure 6).

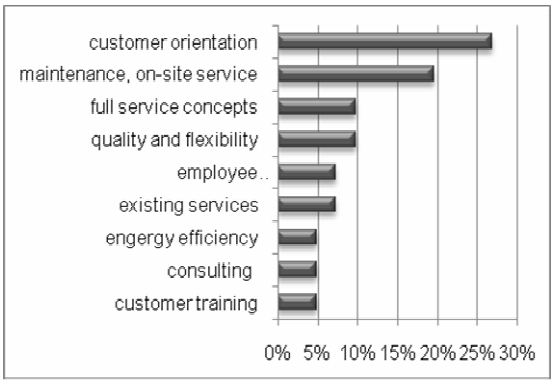

Figure 6: Further development of services and topics

Furthermore, it is in the area of classical services (maintenance, repairs, on-site service) that the companies see the need for further development.
One interesting exception here is the number of times full service offers and service master plans are mentioned.
What significance do the companies surveyed attach to classic as well as to more innovative business models (see also figure 7)?

- Classical services will continue to play a dominant role for the companies surveyed in the medium term
- The demand for results-oriented business models and operator models is likely to remain low over the next 5 years
- It is nevertheless remarkable that the average of the individual answers is relatively high, i.e. innovative business will also become more important, at least in the long term

An international comparison at this point reveals that business models that feature measurable added value will become increasingly important.

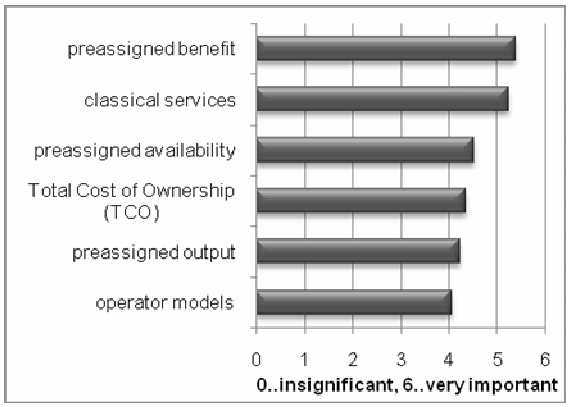

Figure 7: Significance of services and business models

The final question is concerned with the companies' biggest need for action with regard to services.
Based on the relatively high average values of the individual answers it can be assumed that the companies see a generally big need for action in the area of service (see figure 8).

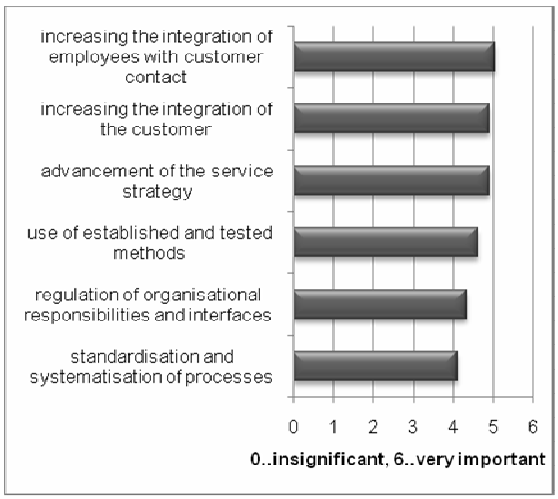

Figure 8: Future need for action

Examining this in detail, we see in the top two positions answers describing customer ties. The companies obviously have the impression that they ought to pay more heed to customer wishes and requirements. In particular the

knowledge that staff with customer contacts should be put to greater use.
One further important point mentioned was the further development of service strategy. This can be seen especially in the context of the results in figure 8, since the expected growth rates in service suggest that the service strategy in the companies is not consistent. What is more, one third of the companies have not defined any form of strategy for service.
The last answers can be grouped under the heading of need for organisational action within the companies. This includes improvements to methodology approach, the coordination of interfaces and process standardisation.

4. FUTURE NEEDS FOR ACTION IN COMPANIES

What is of decisive importance is to have a clear strategy for the area of service rooted in the company and to support and implement these on the basis of standardised and practiced processes and methods.
Services are extremely important for the future economic development of the machinery and plant engineering industry in Austria. The study shows that the participating companies have generally recognised the importance of services for their ability to compete. However, this is only partially reflected in way they approach the issue in their business practice.

- A structured and continuous development process for industrial services is hardly implemented in most of the companies.
- Defining a marketing strategy during the development of the service is of decisive importance for its subsequent economic success.
- Developing services systematically can also help to reveal deficits in this area at an early stage (see "resource model").

The companies surveyed stated that service is an important selling point and instrument for customer retention. However, the majority of companies practice reactive service management.
The significance of service as a strategic area of business was rated very high by almost all the companies surveyed; however there is not much evidence of strategic orientation in the service field and existing service strategies are only pursued half-heartedly. Moreover, the required professionalisation of the service area is not yet sufficient.
The companies surveyed are well aware of the importance of being close to customers and knowing their requirements, and the closer integration of both the customer and staff with customer contacts in the development of services is considered to be very important for the future.
A further important finding from the survey is that service organisation and process standardisation are seen as important for providing professional services but these are not applied universally.
Innovative services and business models are not widespread in the areas of Austrian industry under consideration. This means that there are currently big opportunities for "first movers" in the market.

5. DEMAND FOR FURTHER RESEARCH

This results in the following recommendations for action concerning both companies as well as research institutions, as the latter could very well provide support for the companies.

- Development of a consistent service strategy throughout the company with the aim of providing the customer with measurable added value.
- This requires a change of thinking in the industry – a transformation of the companies from simple producers to producing service providers can ensure the success of the companies.
- The recommendations for action for academia and industry in the operative field are as follows:
- standardisation and optimisation of core service processes with continuous controlling
- increased use of methods throughout the service process (from development to delivery)
- the application of quality management in the area of service is of decisive importance as the quality of service was mentioned in the survey as a very important selling point

The results of the study show large contradictions between the appraisal of the importance of service for the companies and the actual strategies practiced. On the one hand the companies recognise the importance of service but have too little specialist knowledge and too few resources to take advantage of these opportunities successfully, on the other hand this fact makes it necessary to conduct more research into the field of service (development methodologies, organisation, quality management) in order to equip the companies appro-

priately for a successful implementation of industrial product service systems.

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CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

005 . 6 (082)
006 . 83 (082)

INTERNATIONAL Working Conference Total Quality Management – Advanced and Intelligent Approaches (5 ; 2009 ; Beograd)
Proceedings / Fifth International Working Conference Total Quality Management - Advanced and Intelligent Approaches, May 31st - June 4th, 2009. , Belgarde, Serbia ; edited by Vidosav D. Majstorović ; [organized by Mechanical Engineering Faculty, Laboratory for Production Metrology and TQM] . - Belgrade : Mechanical Engineering Faculty, Laboratory for Production Metrology and TQM, 2009 (Novi Sad : Fakultet tehničkih nauka, Graphic Engineering and Design) . - XXV, 558 str. : ilustr. ; 30 cm

Tiraž 400. - Str. III-V : Preface from Editor and Conference Chair / Vidosav D. Majstorović. - Conference Detailed Program : str. VI-XIX. - Napomene i bibliografske reference uz tekst. - Bibliografija uz svaki rad.

ISBN 978 - 86 - 7083 - 660 - 0
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COBISS . SR - ID 158466060