VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

BRNO UNIVERSITY OF TECHNOLOGY

FAKULTA PODNIKATELSKÁ

ÚSTAV EKONOMIKY

FACULTY OF BUSINESS AND MANAGEMENT

INSTITUTE OF ECONOMICS

IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT SYSTEM IN SMALL OR MEDIUM SERVICE ENTERPRISE

IMPLEMENTACE SYSTÉMU TOTAL QUALITY MANAGEMENTU V MALÉ NEBO STŘEDNĚ VELKÉ SPOLEČNOSTI POSKYTUJÍCÍ SLUŽBY

DIPLOMOVÁ PRÁCE

MASTER'S THESIS

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BRNO 2011

Brno University of Technology
Faculty of Business and Management

Academic year: 2010/2011
Institute of Economics

MASTER'S THESIS ASSIGNMENT

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Pursuant to Act. No. 111/1998 Coll., on Higher Education Institutions, and in accordance with the Rules for Studies and Examinations of the Brno University of Technology an Dean's Directive on Realization of Bachelor and Master Degree Programs, the director of the Institute of is submitting you a master's thesis of the following title:

Implementation of Total Quality Management System in Small or Medium Service Enterprise

In the Czech language:

Implementace systému Total Quality Managementu v malé nebo středně velké společnosti poskytující služby

Instruction:

Introduction
Executive summary
Theoretical basis of the work
Problem analysis and current situation
Proposals and contribution of suggested solutions
Conclusions
Literature
Appendices

Seznam odborné literatury:

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The supervisor of master's thesis: doc. Ing. Stanislav Škapa, Ph.D.

Termín odevzdání master's thesis is given by the Schedule of the Academic year 2010/2011.

L.S.

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Brno, 15.06.2011

ABSTRACT

Success of service company is highly determined by effective utilisation of qualified human resources. Opposite to manufacturing firm it is not always feasible to implement required performance standards therefore efficiency has to be delivered by optimised business processes and exact definition of roles in organisation. Principles of Total Quality Management applied on service company enable standardisation of business processes and preserve the flexibility of firm which in long-term perspective ensure for service company competitive advantage, efficiency in the management of organisation and the increase of return on investment for the entrepreneur. Practical example of TQM implementation is prepared for SME providing IT services.

ABSTRAKT

Úspěch společnosti poskytující služby je závislý na efektivním využití kvalifikovaných lidských zdrojů. Na rozdíl od výrobní společnosti u firmy poskytující služby není vždy proveditelné zcela standardizovat výstupy, proto efektivita společnosti je závislá na optimalizaci vnitrofiremních procesů a přesném vymezení rolí u jednotlivých pozic. Principy Total Quality Managementu aplikované na společnost poskytující služby zajistí standardizaci fungování a vnitrofiremních procesů společnosti při zachování potřebné flexibility, což z dlouhodobého hlediska společnosti poskytující služby přinese výhody oproti konkurenci, zefektivnění řízení organizace a zvýšení návratnosti investice pro majitele/investora. Součástí práce je stručný návrh implementace TQM připravený pro SME zabývající se poskytováním IT služeb.

KEY WORDS

Total Quality Management, Small and Medium Enterprise, service firm, standardisation and optimisation, business processes, implementation

KLÍČOVÁ SLOVA

Total Quality Management, malý a střední podnik, společnost poskytující služby, standardizace a optimalizace, vnitrofiremní procesy, implementace

BIBLIOGRAPHIC CITATION

HEMERKA, J. Implementace systému Total Quality Managementu v malé nebo středně velké společnosti poskytující služby. Brno: Vysoké učení technické v Brně, Fakulta podnikatelská, 2011. 81 s. Vedoucí diplomové práce doc. Ing. Stanislav Škapa, Ph.D..

STATUTORY DECLARATION

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Brno, June 8th 2011

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Bc. Jakub Hemerka

ACKNOWLEDGEMENT

The author would gratefully acknowledge his tutor doc. Ing. et Ing. Stanislav Škapa, Ph.D. for his expert guidance and support.

CONTENT

INTRODUCTION

Nowadays competition is rising in all market sectors and even SMEs have to compete with global competition. Therefore any business has to strive for its existence and continuously seek for optimisation of its operation. As a quality is one of the most important criteria in decision making process done by customers, logical consequence is resourceful effort of companies to continuously improve quality of the product or services. Nevertheless quality of production process by itself is not enough to succeed at current market as customers are demanding high quality of support services and lower prices of products or services.

Hence companies to maintain its position at market or to remain competitive started to **focus on quality and effectiveness of entire operation** that launched the era of mass expansion of TQM principles. TQM by itself has originally started to be implemented in large manufacturing companies with highly sophisticated production process where the savings thanks to improvement of quality were so significant that could compensate the demanding implementation process of TQM.

Nowadays TQM is not any more above standard approach of a few elite corporations. Some of the TQM principles as **continuous improvement** or focus on quality of entire organisation have become integrated part of business strategy of many prospering companies. As TQM principles are currently being adopted by medium size manufacturing companies and some service firms have incorporated the TQM principles into their everyday practise, was raised a question whether implementation of TQM is suitable for any company, e.g. for **SME company providing services**.

On the one hand **TQM implementation** is demanding process on both human and financial resources that may negatively influence the Cash flow of SME. On the other hand correctly implemented TQM into SME firm may strengthen the competitive advantages of SME like flexibility and customer's needs orientation.

Diploma thesis named Implementation of Total Quality Management System in Small or Medium service enterprise is focused on the challenge to evaluate whether TQM implementation in SME company providing services is beneficial because the available contemporary theory has not fully answered this query. Therefore the main aim of the diploma thesis is to prove applicability of TQM concept for SME providing IT services. Subsequent objectives of diploma thesis are to identify key success factor of TQM implementation and to develop a compilation of recommended procedures for TQM implementation in SME service company.

1. EXECUTIVE SUMMARY

1.1 Purpose of Diploma thesis

The main objective of diploma thesis is to **prove applicability of TQM concept for SME providing IT services**. Subsequent objectives are to identify key success factor of TQM implementation and to briefly propose a compilation of recommended procedures for TQM implementation in SME service company in case that is proved, based on review of literature and analysis of suitable SME service company operating in IT sector, that TQM is beneficial for the SME service firm.

Therefore diploma thesis starts with analysis of development of TQM in order to understand the TQM concept in wider context. Based on the literature review is analysed why TQM is convenient for the company. Deeply are analysed features of quality management in service firm to identify specifics of service firm and to prove applicability of TQM in service firm according to review of literature. Analysis of SME's specifics is done based on literature review to identify particularity of SMEs in order to be able to identify potential benefits of TQM implementation in SME. Detailed process analysis of suitable SME providing services operating in IT sector is done to evaluate practical applicability of TQM in SME providing IT services.

As far as TQM is found as beneficial and applicable for SME service company, proposed way of TQM implementation in SME service firm operating in IT sector is elaborated. Based on the process analysis of suitable SME providing services operating in IT sector are proposed Key Success Factors of TQM implementation in SME service firm. In summary is recapitulated the potential contribution of TQM implementation in SME service firm operating in IT sectors.

1.2 Methodology of Diploma thesis

Methodology applied in diploma thesis are analysis of published literature, process analysis of suitable SME service firm operating in IT sector based on internal company's documents, non-structured interviews with employees including company's management, Managing Director and observation of everyday practice in the company. Proposal and conclusions aim to consolidate information identified both in literature review and process analysis of SME service firm operating in IT sector.

Conclusion of diploma thesis might **serve for management of SME service firm considering TQM implementation and for academic purposes** as a research paper oriented to confirmation of applicability of TQM concept in SME company providing services, preferably considering firm operating in IT sector.

2. THEORETICAL BASIS OF THE DIPLOMA THESIS

2.1 Brief history of Total Quality Management

Competence of company to produce a goods desired by customers became insufficient as source of competitive advantage in the 1980's, therefore firms had to start to seek for improvements in production and marketing process in order to preserve its competitive advantage. Management started to push production process to be more flexible and to deliver better quality for reasonable expenses. Effort to satisfy customers and to keep customers loyal led to the first attempts to integrate quality and continuous improvements into company's strategic objectives. Adopting the quality and continuous improvements into the level of strategic management and increasing global competition had become the cornerstones of Total Quality Management. Term of Total Quality Management (TQM) is interpreted as "managing the entire organization so that it excels in all dimensions of products and services that are important to customers" (AQUILANO and CHASE, , 1992, p. 186-7) or "a philosophy, an attitude of the mind, and a journey – not a destination" as was described by AGGARWAL (1993, p. 66-8). To understand more about TQM is convenient to learn more about the history of TQM.

The pioneers were firms from United States of America and Japan. From Japan and US TQM rapidly spread around the world as particular production companies strived to retain its market share and position on the market. Mostly TQM flourished in automotive industries, electronic consumable goods industries and in general in process industries. "The key word and probably the main driving force was and is competition. With the increasing worldwide recognition of the positive benefits of competition, illustrated most strongly, perhaps, by the worldwide trend towards privatization, some of the traditional service industries have been thrown into a regime of enforced competition. The benefits of the TQM philosophy have thus begun to be evident in the service industries too." (SANDERSON, 1995, p. 28) Therefore TQM principles have spread from manufacturing industries into service industries. Nevertheless TQM principles were recognised and introduced into practise much earlier.

First evidence of notion of Total Quality Management could be found surprisingly earlier than modern manager may expect. As SANDERSON (1995, p. 28–31) mentions features of Total Quality Management like commitment, customer satisfaction, continuous improvement and personal accountability were proved in work of craftsmen from Ancient Egypt, Minoan Crete, Ur in Euphrates valley or Inca civilisation in South America. Also is proved that manufacturing process in the Middle Ages respected many elements of modern TQM facets. Brilliant example might be case described by SANDERSON (1995, p. 29): "By a Charter in 1327, the Goldsmiths' Company were given absolute responsibility for the quality of gold, silver (and later platinum) manufactured articles and from this beginning a network of Assay Offices were established around the country which right up to the present day have a statutory duty to "hallmark" all precious metal articles sold in the United Kingdom." TQM principles were further developed in medieval and according to SANDERSON (1995, p. 28–31) within the craft guilds where were identified employees commitment, principles of customer satisfaction, participation, continuous improvement, problem identification, alignment of corporate objectives with individual objectives, personal accountability and personal development which belong to fundamental concepts of TQM.

In a modern history quality management recorded progressive development. As you can read in BLECHARZ and ZINDULKOVÁ (2005, p. 5-6) the progress could be separated into six periods. The first improvement was that quality control was delegated to supervisor; subsequently the quality control was delegated to specialist, who became independent in hierarchical structure. Afterwards statistical methods started to be employed in quality control which was called Statistical Process Control (SPC) as is presented by CARR, D. K. and LITTMAN, I. D. (1993, p. 21). Then quality control exceeded production process TQC (Total Quality Control) and finally quality and continuous improvement became integrated part of top management agenda. Since that moment started to be used the term TQM as has begun an era of new level for quality management.

2.2 Why Total Quality Management

Implementation of Total Quality Management into organisation is long-term, demanding and costly process therefore benefits of implementation have to significantly exceed all invested resources (BYRD, 2001, p. 251). Difference between organisation which is managed in accordance with Total Quality Management principles and organisation which does not devote to quality strategic importance is described in table bellow.

Table number 1: Comparison of traditional Management and Total Quality Management principles

Traditional Management	**Total Quality Management**
Needs of users of product and services defined by specialist	Customer focus, where users of products and services define what they want
Errors and waste tolerated if they do not exceed set standards	No tolerance for errors, waste and work that does not add value to products and services
Products and services inspected for problems, then "fixed"	Prevention of problems
Many decisions governed by assumption and good feelings	Fact based decision using hard data, eventually scientific procedures
Short-term planning based around budget cycle	Long-term planning based on improving mission performance
Product of service designed sequentially by isolated departments	Simultaneous design of total product or service life cycle by teams from many functions
Control and improvements by individual managers and specialists	Teamwork among managers, specialists, employees, vendors, customers and partner agencies
Improvement focused on one-time breakthroughs	Continuous improvement of every aspect of how work is done

Vertical structure and centralisation based on control	Horizontal and decentralised structure base on maximizing value added to products and services
Short-term contracts awarded based on price	Vendor partnership of long-tem buyer/ seller obligations, based on quality and continuous improvement

Source: CARR and LITTMAN, 1993, p. 4

Provided table demonstrate that Total Quality Management permeate trough entire organisation and should not be mistaken with system which focus on quality of production. According to TARÍ (2005, p. 186) TQM elements could be synthesized into two main dimensions, management system where belong leadership, planning, human resources and the technical system that consists of a set of tools and techniques (run charts, control charts, Pareto diagrams, brainstorming, stratification, tree diagrams, histograms, scatter diagrams, force-field analysis, flow charts, etc.). Therefore company which successfully implement TQM standardise system of managing entire organisation and at the same time are standardised techniques and tools which are used by employees in everyday work (WILKINSON, 1998, p. 206). Hence very important is employees' identification with TQM principles and employees' dedication to integrate TQM with everyday working practise otherwise TQM might become just very costly internal image of organisation (GOETSCH, 2003, p. 183).

ISO certificates (e.g. 9001, 14001) declares that company fulfil norms that prove certain level and standardised form of specific firm's attribute (management, environmental management etc.). Implementing ISO standards is required in some industries in order to become qualified supplier (e.g. automotive industry) and it is also prestigious for company to be certified by ISO norm. As you can read in TARÍ (2005, p. 187-191) requirement of TQM exceeds the requirements of ISO norm 9001 e.g. in people orientation and employees development, applying the quality improvement techniques and tools or ISO norm do not incorporates continuous improvement. Therefore companies which have implemented ISO 9001 might follow the path of improving the

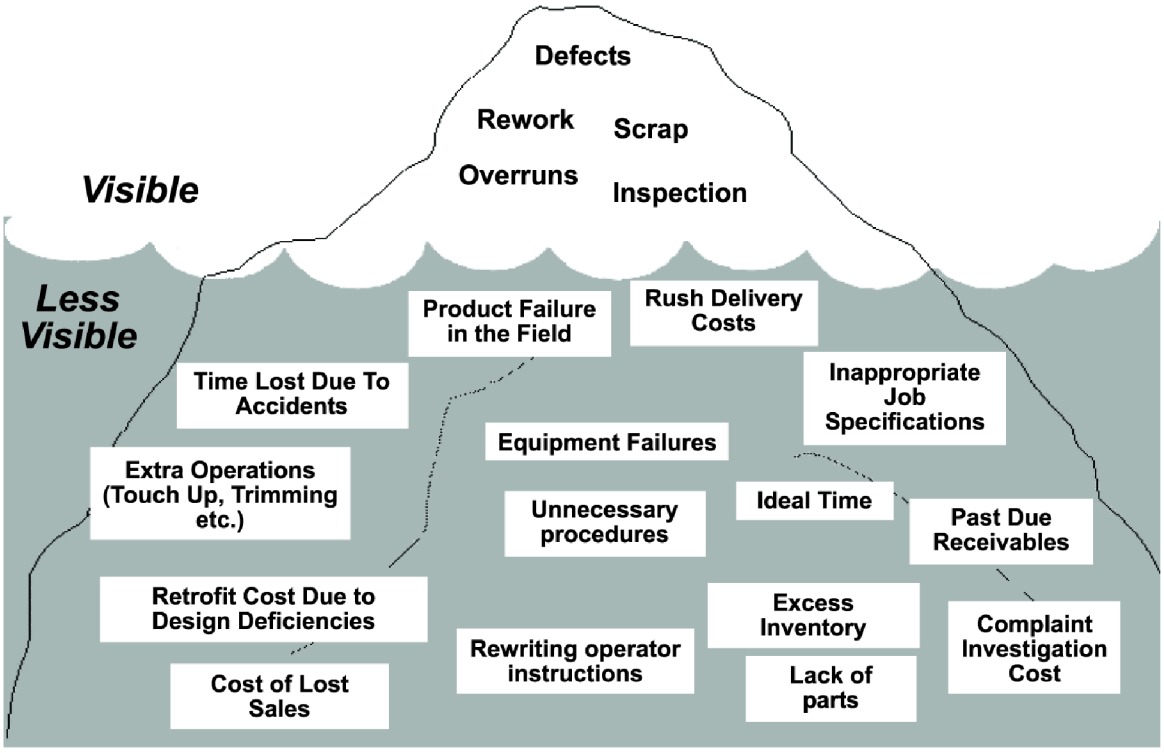
organisation by adopting TQM or if company decides to implement TQM, subsequent obtaining ISO 9001 certificate might be just formal matter.

Reason why TQM is convenient for organisation is very simple. Properly implemented and used TQM increase effectiveness of organisation which reduces required resources that finally means brings cost savings (CARR and LITTMAN, 1993, p. 6). Also quality is according to Frehr (1995, p. 3) the most important attribute that influence decision making of customer. On the other hand quality does not meant only the quality of the product, as quality consumers consider provided service, accessibility or delivery terms (Frehr, 1995, p. 4). Therefore quality must permeate whole organisation as is principle of TQM.

TQM exceeds quality of the products and implement the quality management into each unit of organisation or into head of each employee as you can read in Frehr (1995, p. 3). Customers loyalty is determined by quality as was proved by researches presented in Frehr (1995, p. 5). On contrary clients complaints are caused in 70% of cased by non-production issue Frehr (1995, p. 6) which even more confirm substance of TQM. Therefore each organisation must understand quality management as a process which is not focused on error correction but infinite improvement process in each stage and phase of operation.

As the primary aim of TQM might be considered consumer satisfaction (Frehr, 1995, p. 4) because only fully satisfied customers purchase the service or goods. Very important and even a little bit more implicit aspect of TQM is profitability since the aim of TQM is also continuous decreasing production and operating costs (CARR and LITTMAN, 1993, p. 7).

Picture number 1: The cost of quality iceberg

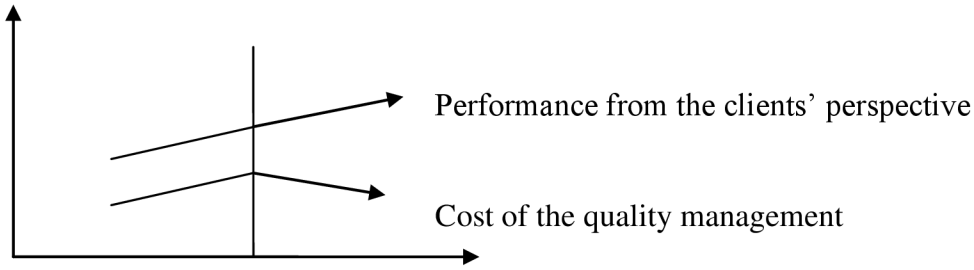


Source: Krishnan, S. K., 2006, p. 81

As you can see on the picture number 1 implementation of TQM mean decrease of operating cost even the process of TQM implementation is demanding both on time and financial resources.

Graph number 1: Reasons for TQM implementation

TQM implementation



Source: Frehr, 1995, p. 9

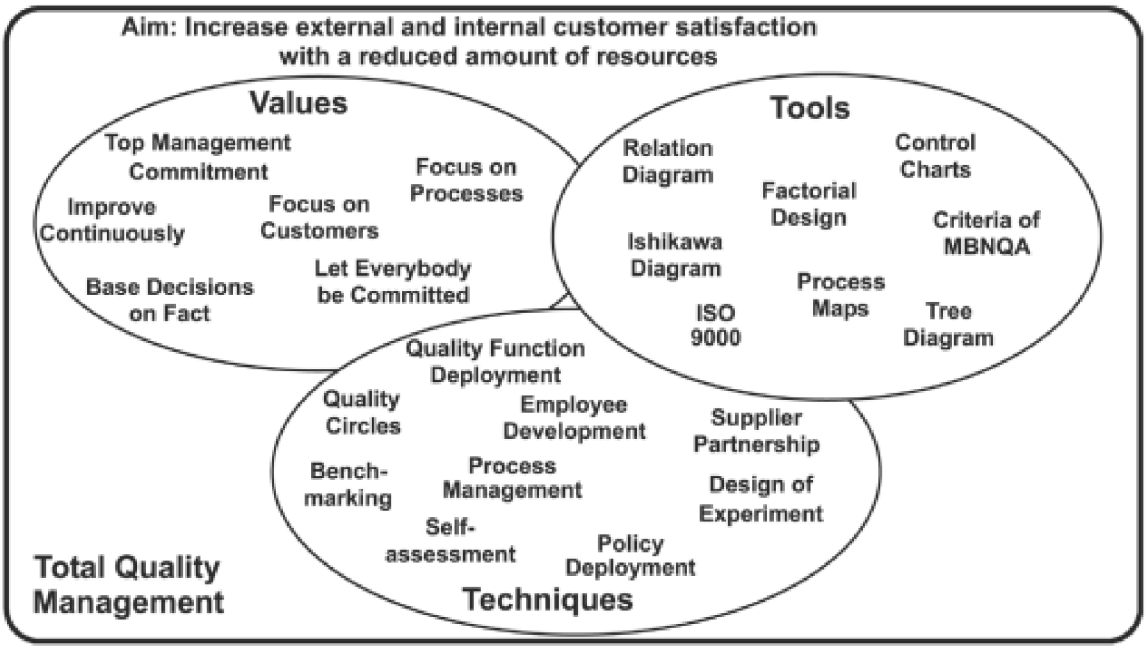
To avoid false notion about TQM it has to be mentioned that TQM helps to avoid redundant work, inefficient work or generating errors in whole operation process nevertheless TQM does not identify what should the organisation do to be successful on the market (Frehr, 1995, p. 10). Therefore TQM should be considered as competitive advantage therefore the reason for TQM implementation is to maintain the competitive advantage which in market economy means to survive on the marketplace (CARR and LITTMAN, 1993, p. 9).

According to Hanson and Klefsjö (2003, p**.** 71) nowadays SME's play important role in global economy. However small organisations have been slow to adopt and implement TQM (LEE and OAKS, 1995). One of the reasons why SME hesitate to implement TQM is lack of resources (LEE and OAKS, 1995). Another reason is more difficult adaptation process in SME as adoption of TQM require certain level of standardisation (Hanson and Klefsjö, 2003, p**.** 71). On the other hand many aspects of SME are in favour of TQM implementation therefore successful SME may profit even greater from advantages of TQM implementation than large organisation. As you can read in Hanson and Klefsjö (2003, p**.** 72) these advantages are greater flexibility, more effective communication, easier changing the organisation's culture and higher management participation.

Even as was described above correctly implemented TQM bring competitive advantages and many other benefits to organisation not all cases of TQM implementation has resulted in economical success of organisation. Hanson and Klefsjö (2003, p. 72) identify two main reasons of TQM failure; "vague definition of TQM and inappropriate implementation process". These risks could be overcome by real management involvement and managing the TQM implementation process by internal or external consultant who is experienced TQM expert (TARÍ, 2005, p. 187-191). After correct definition and TQM implementation organisation will benefit from better financial results (HENDRICKS and SINGHAL, 1997). Therefore TQM is system which increases the profitability of the organisation but precondition of TQM success is successful implementation (Hanson and Klefsjö, 2003, p. 72).

For successful implementation of TQM is crucial accurate definition of TQM specifically for the specific organisation and bearing in mind the basic principles of TQM during whole implementation and above all the principle already mentioned "increased customer satisfaction with reduced amount of resources" (Hanson and Klefsjö, 2003, p. 72). More specifically would be conditions of TQM success described in the further parts of the diploma thesis nevertheless answer to question of why TQM is to increase customer satisfaction with reduced amount of resources.

Picture number 2: Increase of customer satisfaction with reduced amount of resources



Source: Hanson and Klefsjö, 2003, p. 74

2.3 Quality management in service firm

TQM should not be considered only in the case of manufacturing firms. The needs of service companies to follow TQM principles in generating outcome reach similar urgency as in the case of manufacturing firms. "TQM, which has been called a management philosophy, a business strategy, a company and a systematic, scientific, companywide activity is an holistic approach to managing quality; it requires development of a quality strategy and a framework for its implementation" (BANWET, BREJA and IYER, 2011, p. 5). From BANWET, BREJA and IYER point of view the production orientation of company does not influence the relation towards the TQM principles as the quality matter is common for each organisation. To be more accurate „Quality refers to the correctness or appropriateness of activity or fitness of an entity; it is compliance to a certain standard" (BANWET, BREJA and IYER, 2011, p. 6).

Considering TQM concepts difference between service and manufacturing company could be hardly identified on this level. The realty of nowadays world is that service firms play very important role in global economy. Rather courageously is current situation described by GODLEVSKAJA, IWAARDEN and WIELE (2011, p. 62) "In many developed countries around 80 per cent of GDP is generated from services. Many people are employed in service and much of what is done in our everyday life is related to services. Twenty-first century in general is going to be the age of services, and the age of The Service Science, a science about services, dealing with service concepts, service modelling, service systems, service quality and service management". On the other hand their assertion is supported by figures. Traditional production companies like IBM, Hewlett-Packard, Xerox, Nokia, ABB and General Electric significantly increase their income from services and these companies are becoming service oriented (BROWN, MUSANT and SICHTMANN, 2011, p. 202). For instance IBM was generating 41 per cent of its total revenues by services in 2003. In year 2006 53.2 per cent of total revenues were generated by services. This figure keeps increasing tendency as in year 2007 55.3 per cent of total revenues was created by services (GODLEVSKAJA, IWAARDEN and WIELE, 2011, p. 62 (2011, p. 62). Reason why services becoming dominant source of revenues for even traditional producers are many, for example higher flexibility which enable promptly react to customer needs, higher profit margin, protection against competition with lower human resource expenses and generally service is not as easy to duplicate as production, profitability and breakeven point could be reached more quickly as fixed cost and required investments are generally lower, finally should be mentioned changing environment and customers' needs (BROWN, MUSANT and SICHTMANN, 2011, p. 202). This situation implies that service has to be provided at the very high level and quality of service is proportionally dependent on management and quality standards.

According to BREHMER, KOWALKOWSKI and KINDSTRÖM (2011, p. 182.) in order to successfully develop and deploy services, are proposed three distinct

service components that need to be managed:

1) service concept;
2) service process;
3) service system.

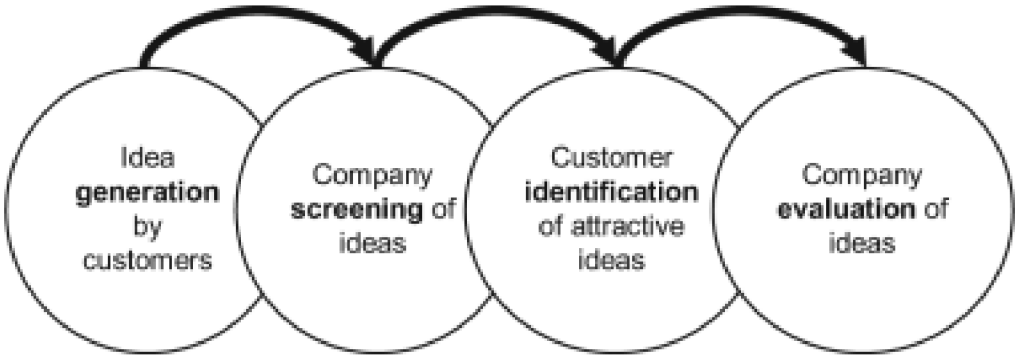
Service concept might be considered as a synonymous with the construct of service offering. The service offering determines both what has to be done for the customer and how it has to be achieved (Brehmer, Kowalkowski and Kindström, 2011, p. 182). Service process is explained by Brehmer, Kowalkowski and Kindström, (2011, p. 182): "The service offering determines the requirements of the service process, i.e. the chain of local and central activities needed to produce the service. A common differentiation between process categories is that of front-office processes, which are encountered by the customer, and back-office processes which take place internally without direct customer." The service system consists of the resources required for the service process and the provided service. Service system contains company's organizational structure and its physical/technical resources, customers, and employees (Brehmer, Kowalkowski and Kindström, 2011, p. 182).

Nowadays to keep top quality service means to maintain innovation process as source of the competitive advantage. Both production and service companies are forced by customers to actively innovate their portfolio (BROWN, MUSANT and SICHTMANN, 2011, p. 207). Theory developed by professor Kano is presented in work of WITELL (2011, p. 88). This theory aims to "improve understanding of how customers evaluate and perceive quality attributes" or in the other words theory that explains "the relationship between the degree of sufficiency and customer satisfaction with a quality attribute" (WITELL, 2011, p. 88). Quality attributes might be classified into following quality dimensions as is described by WITELL (2011, p. 88):

1) attractive;
2) one-dimensional;
3) must-be;
4) indifferent;
5) reverse.

Attractive quality refers to attributes that surprise and delight customers; it is the best possible result. LÖFGREN and WITELL (2008, p. 60) declare that there is a lack of empirical research on attractive quality creation. Attractiveness is considered as subjective and attractiveness is influenced by current trends and local preferences. The worst on the scale of quality dimension is the reverse dimension which indicates that customer is not sufficient at all and as far as there is any other option; customer would not continue to use this product or service. To provide attractive quality require anticipate customers needs from the company which could be done by including customer into quality definition and evaluation process.

Picture number 3: A process for including customer idea generation in attractive quality creation



Source: WITELL, 2011, p. 88

It is not important whether is considered service or production firm in the process of adapting the company's portfolio based on customer's feedback but this process should become integrated part of TQM. Implementation of the process into organisation requires developing tools and procedures that would enable to incorporate customer's feedback into innovation of firm's portfolio (FOTOPOULOS and PSOMAS, 2010, p. 687). Developing these surveys is just tactical task that has to be derived from specific of market segment and type of organisation. Case study of integrating customer idea into ongoing innovation as significant feature of TQM would be more concretely described in further parts of diploma thesis. Nevertheless customer's feedback generally

should be integrated in TQM principles of any firm, therefore customer's feedback should be integrated in quality management of service company as well (WITELL, 2011, p. 97).

2.4 Specifics of SMEs

SME stands for small to medium-sized enterprise (BRONET, MAIRE and PILLET, 2008, p. 765-781). There are plenty specifics that differentiate SME from other enterprises. B2B customers and industrial partners usually have the negotiation power to dictate the conditions to SME partner on the other hand characteristic feature of SME may become the ability to adapt to the buyer's requirements (BENDAVID, BOECK and LEFEBVRE, 2009, p. 561). The reality is that industrial partner especially considering multinational firms would always have better negotiation power than local SME. The way how to cope with this disharmony in the partnership with bigger company is the flexibility which has to be kept as a strategic characteristic of SME. TQM is practical tool which enables standardise and optimise processes in SME therefore company which has implemented TQM can adapt much more easily because this firm fully controls its operation.

According to BENDAVID, BOECK and LEFEBVRE (2009, p. 562) "past research has demonstrated that SMEs are more vulnerable to outside e-commerce initiatives" because "large buyers have the power to influence their suppliers to adopt inter-organizational systems". This situation proves that SME often do not benefit from one of their main competitive advantages, the potential to be flexible and practically employ ongoing adaption process, because this competence is much more easily applicable in SME than in MNC. SME strive to create strategic alliances because "strategic cooperation and networks are seen as means that allow SMEs to compete and innovate in dynamic business environments" (HELANDER and VALKOKARI, 2007, p. 597). HELANDER and VALKOKARI (2007, p. 597) explain their opinion by assertion that "the success of a company depends on its collaboration with other organizations that influence the creation and delivery of its products or services". Even though this

assertion is a little bit too general its fulfilment is crucial key success factor of SME. On the other hand long-term success of any organisation brings effective knowledge and network management that might become a difficult task for SME because SME may suffer from lack of resources and competencies needed within the organization in order to yield new opportunities as is described in (HELANDER and VALKOKARI, 2007, p. 597).

CARSON, GILMORE and GRANT (2001, p. 6) define the SME limitation "limited resources (such as finance, time, marketing knowledge); lack of specialist expertise (owner-managers tend to be generalists rather than specialists); and limited competences and impact of marketing in the marketplace". Nevertheless the limitation of SME should not lead towards haphazard operation (CARSON, GILMORE and GRANT, 2001, p. 6). A great challenge for SME is to built up knowledge management therefore the knowledge is in SME very often concentrated by a very few key person (HELANDER and VALKOKARI, 2007, p. 597). If SME does not succeed to create knowledge management, the organisation is very vulnerable by leaving key person or even worse by establishing a new company, the competitor, by a previous employees or business partner. Also the SME business processes should be separated from concrete employees and definitely should not correspondent with personal relationship (HELANDER and VALKOKARI, 2007, p. 598). On contrary building personal relationship with its surroundings is for SME very important and may support the business or prevent from many inconveniences as far as the ethical edge is not busted or company does not built up its business on the personal relationship with surroundings. CARSON, GILMORE and GRANT (2001, p. 7) refer about owner-managers network: "Owner-managers tend to have relatively small and non-expensive networks with little resort to expected external contacts such as accountants and bank managers. While these networks were used deliberately to solve problems, the formation and development of the networks were largely unstructured and coincidental in nature". SME managers should not neglect legal and ethical networking as "networking for business activities is about companies joining together with a common objective, working together, and cooperating through the exchange and sharing of ideas, knowledge and technology" (CARSON, GILMORE and GRANT, 2001, p. 7). Similar

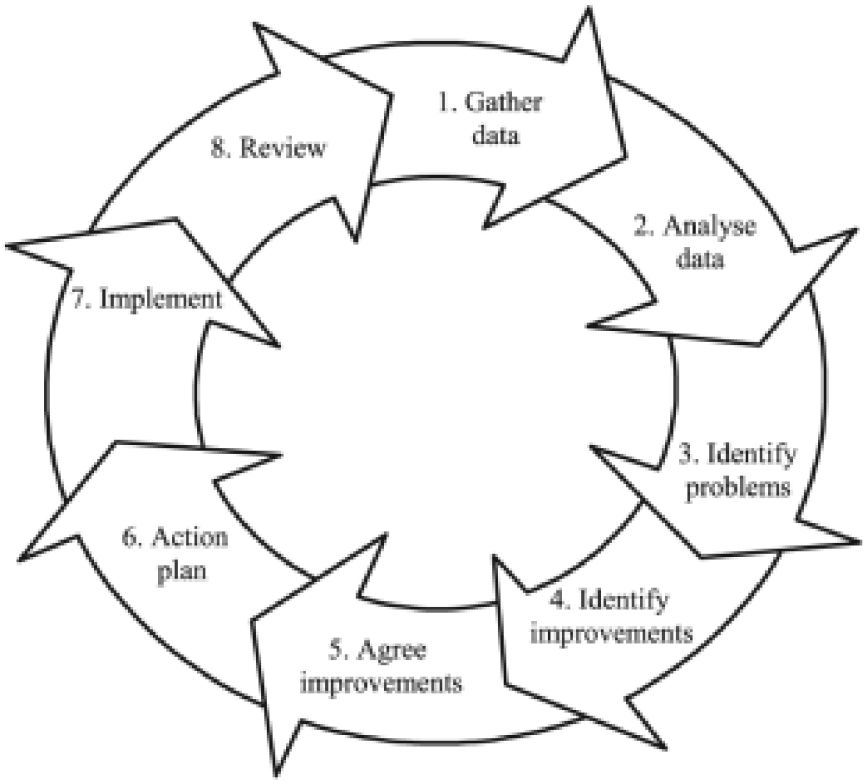
use of networking is very difficult to achieve between larger companies therefore SME may benefit from networking as a source of competitive advantage till the company is not excessively dependent on the network.

Interesting point of view on improving SME competitiveness is presented by KARAEV, KOH and SZAMOSI (2007, p. 819): "the cluster concept has been shown to be an efficient instrument for strengthening regional and national economies". To explain concept is introduced PORTER's (1990, 12) cluster definition: "national clusters are formed by firms and industries linked through vertical (buyer/ supplier) and/ or horizontal (common customers, technology, etc.) relationships with the main players located in a single nation/ state". From the definition is clear that cluster competitive advantage is not very convenient for applying to SME in IT services which is the main subject of the diploma thesis therefore cluster concept will not be further analysed.

Already has been mentioned a positive contribution for SME competitiveness thanks to TQM implementation. However should not be omitted "the practical use of ISO 9000 to drive continual improvement within a SME" as is mentioned by HUGHES, MULHANEY and SHEEHAN (2004, p. 325). Even the cost of implementation ISO 9000 and maintenance of the certification might be proportionally more expensive for SME than for bigger company's advantage gained thanks to ISO implementation should buy out the spending. SME most likely cannot allocate own employees to entirely proceed the ISO certification which require external consultant at least temporary employed into the organisation. If nothing else usually "bringing in external consultants may generate longer-term benefits" (HUGHES, MULHANEY and SHEEHAN, 2004, p. 325), because external consultants might help to "embed the processes or systems for continual improvement into the culture or procedures of the business".

ISO is not the main focus of the diploma thesis therefore would not be more deeply analysed. Nevertheless some features of ISO are similar with TQM and also ISO could bring to SME very similar benefits as TQM as it is proved in following picture.

Picture number 4: ISO model for continual improvement



Source: HUGHES, MULHANEY and SHEEHAN, 2004, p. 327

Back to specific of SME, role of owner and manager are often interconnected which is significant difference against bigger organisations or the MNC. Owner in the role of manager may bring higher enthusiasm into organisation, may work less or more than are standard working hours, owner could pull the SME toward the success or might become the implicit limit of the organisation (BESTERFIELD, 1999, p. 247). It is very subjective whether owner in the post of manager stimulates or inhibits the SME towards better results nevertheless TQM may help owner to standardise company's performance therefore owner's involvement in organisation could be more beneficial than without TQM (WILKINSON, 1998, p. 198).

Another feature of SME is less formal managerial approach and SME are often much more free from bureaucratic rules (SMITH and ZAGELMEYER, 2010, p. 392) that enable to organisation be more direct and business focused. On the other hand as you can read in GINSBURG (2001, p. 266) a reliance on informal working practices could

limit organisational performance because the employees' business orientation and focus on targets may decrease.

To conclude about specifics of SME, "Small and medium-sized enterprises, firms with fewer than 250 employees, are often identified as a source of job growth and increased competition in a European context" SMITH and ZAGELMEYER (2010, p. 392) therefore SMEs deserve correspondent academic observation. SME can take advantage of flexibility, ongoing innovation and quick response to market condition (TQM supports all these features of the organisation). Even SME might be limited by financial, human and other resources, in case SME can exploit its benefits, SME will achieve long-term prosperity and success.

3. PROBLEM ANALYSIS AND CURRENT SITUATION IDENTIFICATION

3.1 Process analysis of suitable SME providing IT services

Process analysis has to be realised in a company which could be considered as perfect target group according to main aim of diploma thesis. In accordance with the objectives of diploma thesis is selected IT Logica s.r.o., SME that develops tailor made software, sophisticated online applications and provides full service online marketing.

Diploma thesis is focused on academic, not direct commercial contribution; therefore analysis of IT Logica s.r.o. would be oriented on analysis of processes without providing consultancy recommendation for any possible process optimisation. IT Logica is implementing TQM in cooperation with Masaryk University therefore is very suitable object for processes observation.

To start with process analysis targets of analysis should be identified. The main targets of IT Logica's process analysis (GANDHINATHAN, R. and KARUPPUSAMI, 2006, p. 376) according to the objective of diploma thesis are:

1) long-term and short-term company's objectives,
2) indicators that enable measuring of company's objectives,
3) roles and processes identification,
4) analysis of key processes or sub-processes,
5) the key success factors of principal processes identification.

Long-term objectives have been set by owners of IT Logica in order to establish short-term objectives and crucial processes. These objectives should not be mistaken with business plan objectives like annual revenues, sales growth etc. as diploma thesis is focused on IT Logica from process analysis point of view.

Table number 2: Objectives of IT Logica's business processes

Objectives of IT Logica's business processes
Identification and minimisation barriers to identify customer's needs
Customer's needs satisfaction leading to increase customer's demand
Implementation of desire to satisfy customer's needs into all processes and sub-processes
Increase of customer's satisfaction has to proportionally increase company's revenues
Ongoing evaluation of business and production process effectiveness and profitability
Effective cooperation of sales, production and back office departments

3.1.1 Objectives of IT Logica's processes and performance indicators

Identification and minimisation barriers to identify customer's needs are achieved by external analysis of customer and market segment which has to be done before the negotiation. The indicator of successfulness is ratio between the length of analysis (measured in man-days) and number of customers requests (measured in revenues); then number of amendments of project offer; percentage successfulness of project offer (objective is established over 80%); number of change request after initial analysis (objective is established under 10%).

Customer's needs satisfaction leading to increase customer's demand are achieved by building long-term customer relationship that is measured by customer loyalty, trends in amount of revenues generated by customers in relation with number of months of cooperation, percentage of revenues of generated by newly acquired customers (objective is established over 20%); percentage of leaving customers and customers who decrease its demand (figure should be minimised below 10%). Number of visits and contacts with client is measured per quarter and this figure is compared with the achieved sales figures generated by the customer. The aim of this process is to maintain client's effectiveness (customer should be profitable for IT Logica and cooperation should be effective for both sides; IT Logica and client). IT Logica's consultants (Sales

Representatives) have to continuously analyse development of customer's market segments, proactively offer to customers new services, focus on call to action during the meetings with clients and keep in mind that ratio of time required (man-days) to sign a new contract and profit margin achieved thanks to client is analysed by CBO (Chief Business Officer).

Implementation of desire to satisfy customer's needs into all processes and sub-processes are objective of IT Logica processes which is crucial feature of TQM as well. This process objective is in accordance with TQM standards and demonstrates that IT Logica is being influenced by running TQM implementation. Customer satisfaction is in IT Logica considered as long-term objective and performance indicator for all departments (sales, production and back office departments). IT Logica measures thanks to timesheets where are recorded man-days of all employees whether the growth of both internal and external expenses spent on customer's satisfaction stays in proportion with growth of measurable outputs of sales (revenues, profit margin) generated by client.

Critical indicators are revenues, gross margin and profit generated by client per quarter and increase of customer's satisfaction has to proportionally increase company's revenues as was stated in objectives of IT Logica's processes. Optimise profitability helps IT Logica ongoing analysis of relationship with clients. Output of the analysis is identification of life-cycle of cooperation with customers that determines the way how should be customer treated (time dedicated from IT Logica employees to the client and approach towards the client). Crucial life-cycle indicator is the potential to generate incremental revenues, gross margin or profit by increasing the effort to satisfy client's needs by IT Logica employees.

Ongoing evaluation of business and production process effectiveness and profitability is done each quarter by confrontation the actual results with planned targets established in annual business plan. Annual business plan consist of revenues, gross margin and profit targets, but also annual business plan includes number of newly acquired customers and generated financial results from newly acquired clients; ratio of loyal top client to the

other customers and identification how many customers creates 80% of financial results of company.

Effective cooperation of sales, production and back office departments is achieved thanks to specified job descriptions of all IT Logica's employees. Clearly defined work-flow and priorities set for cooperation among the departments are essential for effective cooperation. Metrics which is used to patrol effectiveness is 360°stakeholder (owners, customers, employees etc.) analysis based on survey of satisfaction in relation with achieved results. IT Logica also uses anonymous survey which is discovering the employees' satisfaction or reasons for leaving the company by former employees.

3.1.2 Stakeholders of IT Logica and their competences

In this section stakeholders and their competences will be entirely described.

Table number 3: Stakeholders of IT Logica

Owners	Currently are employed in IT Logica as CEO and CBO.
Management	Management in IT Logica consist of CEO, CBO and Project Manager. CEO and CBO are concurrently owners of the company.
Sales department	Sales department currently consist of CBO and Consultant (Sales Representative).
Production department	Production department consist of 4 Graphic Designers, 3 Coders, 7 Programmers, Social Media Specialist, Copywriter, Online Campaign Specialist and Creative Specialist. Some of the employees are externalist.

Back-office	Back-office consists of two externalists, External Accountant and Lawyer.
Customers	Customers of IT Logica are B2C companies and significant E-commerce players in Central Europe.
Suppliers	Suppliers of IT Logica are connectivity providers, HW and SW vendors, web developing company that supplement production capacity of IT Logica and provides technical consultancy.
Partners	The closest partners of IT Logica are On-job-trainers, Masaryk University which acts as Process and Business Consultancy Company for IT Logica and non-competitive software houses like ABRA (ERP developer).

Table number 4: Roles in IT Logica and their competences

Role	**Competence**
CEO, CTO (Chief Technical Officer), Office and Project Manager, System Analyst, Strategy Specialist	Statutory Representative Approves Sales and Marketing Annual Plan Contributes to creating Business Plan, Vision, Mission, Employees policy and Business Development Manages Operation and Crucial Projects Manages Technical, Technological Optimisation and Development Develops Marketing strategy of online projects

CBO, CFO (Chief Financial Officer), Project Manager, Strategy Specialist and Business Analyst	Creates and manages Sales and Marketing Annual Plan Contributes to creating Business Plan, Vision, Mission, Employees policy and Business Development Manages Operation Analyses Market Segments, Client's needs and Business Opportunities Develops Marketing strategy of online projects
Project Manger	Creates Project team and documentation Manages realisation of the projects Deliver projects to client and organise introductory training Analyses technical feasibility of the projects Reports to CEO and CBO
Developer (Coder = Html programmer, Programmer)	Develops SW application according to Project Documentation Tests SW application Reports to Project Manager
Graphic Designer	Creates Design and Visualisation of Applications Reports to Project Manager
Consultant (Sales Representative)	Acquires orders and clients according to Sales Plan Reports to CBO
Support, Maintenance and Tester	Provides technical support for internal and external needs Realises non-expert testing Administers SW and HW equipment Reports to CEO, Project Manager

Social Media Specialist and Copywriter	Creates strategy and proposal of campaign on Social Network Realises campaigns on Social Network according to Project Documentation Reports to Project Manager
Online Marketing Specialist	Realises online (pay-per-click, search-engine-optimisation, linkbuilding) campaigns according to Project Documentation Reports to Project Manager
Creative Specialist	Proposes creative part of the projects Reports to Project Manager
External Accountant	Keeps the books and managers salary agenda Reports to CFO and CBO

Responsibility for the processes

Company Management

1) Approves budget of projects
2) Sets the annual plans
3) Establishes and changes the objectives and priorities
4) Decides about investment

Pre-sales, Sales & Front office

1) Acquire projects orders and customers
2) Analyse market segment and potential to offer IT Logica's service
3) Prepare offers and project proposal
4) Deal with change requests from customers
5) Analyse online applications
6) Create product/ services strategy

Production and support

1) Provide services and support to customers
2) Develop products (SW, online application)
3) Test developed applications
4) Fulfil change requests
5) Participate on cost estimations and project proposals for clients

Back-office

1) Keeps the books
2) Deals with bills and invoices (receipt, emitted)
3) Manages legal agenda

3.1.3 Key processes analysis

The most important processes for IT Logica considering IT Logica's elemental existence are Process of order/ customer acquisition (order of project after customer acquisition) and Process of project realisation. Therefore these processes would be deliberately analysed.

Process of order acquisition

IT Logica differentiate approaches towards customer an order acquisition.

Table number 5: IT Logica's approaches towards order acquisition

Channel used for order acquisition	Brief description
New business opportunities	Contact of potential customers based on market segment analysis
Tenders	Tenders announced by public sector or MNC and large companies
Subcontracts projects	Customers who re-sell our project to their clients (agencies etc.)

Current customers	Offering new projects or projects improvement to current customers
Recommendations, references and owner-managers network	Asking for recommendation and references, positive exploiting social network of company
Partners	Complementary services for partners or partner's clients

In order to structure the process of order and customer acquisition would be used table (LIN and TSAIH, 2006, p. 519) that entirely describes attributes of the process.

Table number 6: The mapping of order/ customer acquisition process

Process name	Acquisition of order from customer
Description	Process describes activities (sub-processes) leading towards order acquisition. Activity is initiated by a CBO or Consultant (Sales Representative) who finds a customer, either on the basis of market analysis or previous contacts. Then Consultant/ Business Analyst has to identify client's needs and based on the needs Consultant in cooperation with CBO (mark-up), Strategy Specialist (strategy and product proposal), Project Manager (project plan) and Production team (workload) prepares tailor made offer for customer. Consultant then presents the offer to client and in case of successful presentation the contract with client is signed (contract is either generated from IT Logica's accounting system or tailor made with IT Logica's lawyer).

Input	Customer's needs and Front Office attempt
Output	Calculation and Offer, Contract, Project plan (specification)
Roles	Front Office, Consultant and team according to his requirements for Offer preparation: CBO, Project Manager, System Analyst, Strategy Specialist, Business Analyst Production team according to Consultant's requirements for Offer preparation: Developer (Coder, Programmer), Graphic Designer, Social Media Specialist, Copywriter, Online Marketing Specialist, Creative Specialist
Performance indicators	Expected revenues, gross margin and profit margin for IT Logica from contract Time of the employees (man-days; internal expenses) required for offer preparation in relation with financial attractiveness of the contract Number of needs and introduced requirements from client Number of required amendments of the offer

Table number 7: Customer and order acquisition process analysis

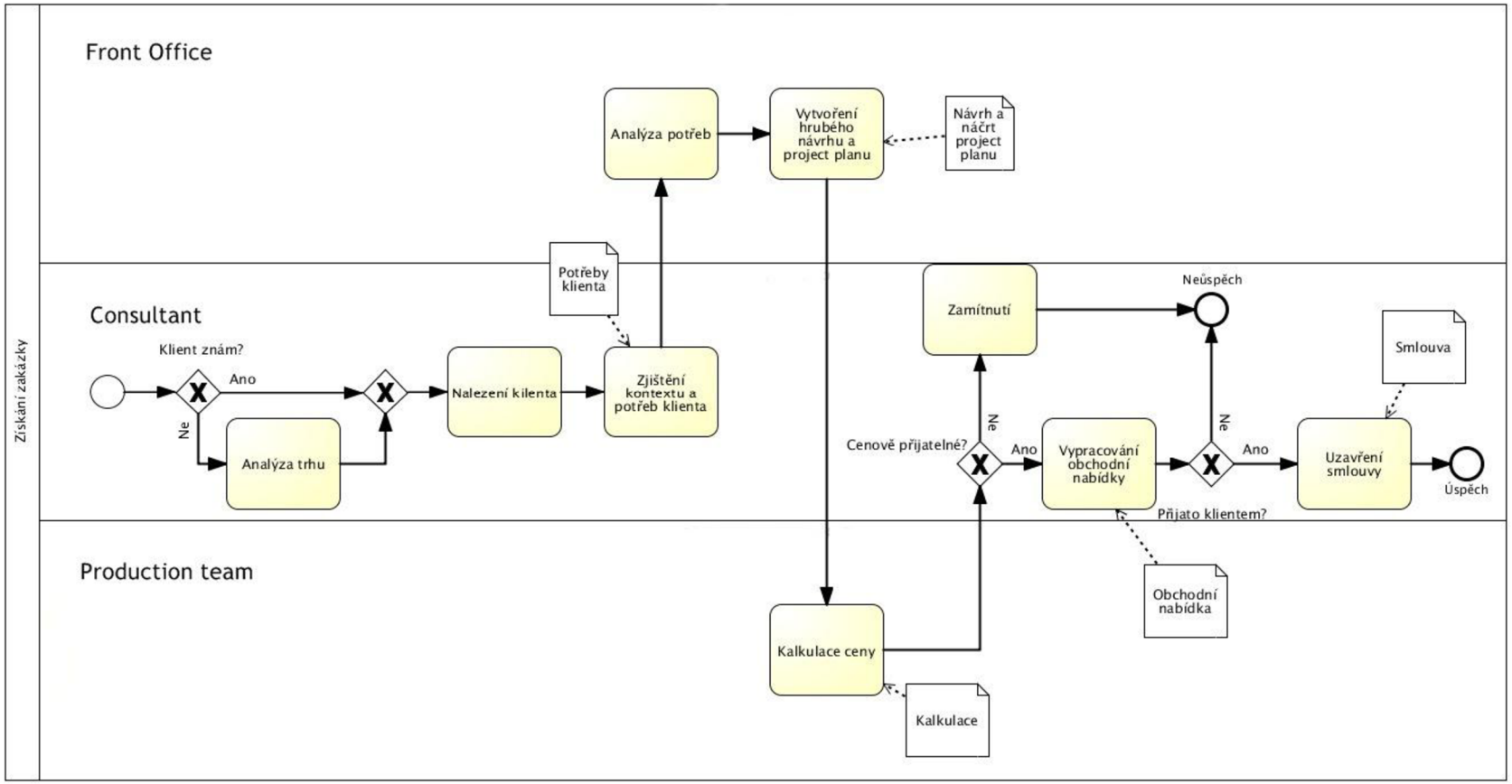
Number	Name	Input	Output	Roles	Description
1.	Potential customers identification	Situation on the market, actual soft-ware, online activities, facilities of potential customers	List of potential customers	Consultant	Consultant analyses market segment and identifies potential customers
2.	Meeting arrangement	List of potential customers	Arranged meetings with potential customers	Consultant	Consultants contacts potential customer and arranges meeting with responsible person
3.	Customer need's identification	Information from potential customer	Customer's needs	Consultant	Consultant at the personal meeting detects actual potential customer's needs that IT Logica may satisfy and Consultant makes sure that Customer expects offer from IT Logica (customer has to be attracted by Consultant's presentation)

4.	Proposal for cooperation development	Customer need's	Proposal for cooperation with potential customer	Front Office, eventually part of Production (according to extensiveness of proposal)	Consultant call on Project Manager, eventually CBO, System Analyst, Strategy Specialist, Business Analyst, Social Media Specialist, Online Marketing Specialist and Creative Specialist to participate on proposal for cooperation
5.	Offer proposal and Project specification development	Proposal for cooperation with potential customer	Offer proposal	Consultant, Project Manager	Consultant from groundwork that was created by IT Logica's team based on customer's needs identification develops offer for client Project Manager participates on Project Specification and Technical Feasibility Analysis if it is required
6.	Calculation development	Offer proposal	Offer prepared for presentation	Consultant, Project Manager, Production department, Front Office	Production department in cooperation with Project Manager develops calculation (internal expenses), Consultant finalise the Offer and Consultant sets the selling price (CBO may supervise the final form and selling price)

7.	Offer presentation	Offer	Face to face offer presentation	Consultant	Consultants presents the Offer to client
8.	Contract Signature	Contract proposal	Contract confirmation/ Offer amendments	Consultant	If customer agrees on prepared Offer, contract is signed/ If customer does not agree on prepared Offer, Offer is adjusted
9.	Offer adjustment	Customer's comments and remarks	Offer adjusted according to client's needs	Consultant, eventually Project Manager, Production department, Front Office	Consultant in cooperation with Project Manager adjust Offer according to client's needs in accordance with previously described procedures

10.	Adjusted offer presentation, contract signature	Adjusted offer and contract	Contract confirmation/ termination attempt to acquire order from this client	Consultant	Consultants presents the adjusted Offer to client If customer agrees on adjusted Offer, contract is signed/ Attempts to acquire order from this client is terminated

Diagram number 1: IT Logica's order acquisition



Source: IT Logica, 2011c

3.1.4 Process of Project realisation

Since the order of project realisation by IT Logica's client is confirmed, production process is initiated.

In order to structure the production process, again would be used table (LIN and TSAIH, 2006, p. 519) that entirely describes attributes of the process.

Table number 8: The mapping of production process

Process name	Project realisation process
Description	Process describes activities (sub-processes) leading towards handover of the completed project to the client. Activity is initiated by a CBO or Consultant (Sales Representative) who acquired a project order from customer. Then Project Manager has to prepare Project Specification for Production team, select a Production team and present Project Plan to the Production team. Production team has to realise its task according to Project plan and Specification and Project Manager Manages the realisation process. Then is the product presented to the client (after completion specific phase of the project or final product in case of smaller projects) by Project Manager in participation of Consultant (Sales Representative) or CBO. Customer's feedback determines the completion of the project which is managed by Project Manager and realised by Production team.

	When is project completed, Project Manager elaborates Project documentation. Then is final product presented to the client which may include launching the application, handover of access to the administration, training of client or client's employees or just handover of completed work. Then is project billed according to the agreed price to the client (CFO supervises this process) and client's payment is checked by CFO. After project completion may follow cooperation with client (support, expansion of the project or offering other services).
Input	Customer's order and Production department work
Output	Completed project, Payment from client, further cooperation with satisfied client
Roles	Front Office: Project Manager, Consultant, CBO and Production team: Developer (Coder, Programmer), Graphic Designer, Social Media Specialist, Copywriter, Online Marketing Specialist, Tester, Analyst Back Office: Accountant, Administrative Support

Performance indicators	Achieved revenues, gross margin and profit margin for IT Logica from the realised project Fulfilment of Project plan Customer satisfaction based of product and service quality and fulfilment of Project plan Expected revenues, gross margin and profit margin for IT Logica from further cooperation with client Number of client's complaints

Table number 9: Production process analysis

Number	Name	Input	Output	Roles	Description
1.	Production process initiation	Project order confirmed by customer, specified offer	Project specification, Production team selection and Project Plan	Project Manager, Production team (Html Programmer, Programmer, Graphic Designer, Social Media Specialist, Copywriter, Online Marketing Specialist, Tester, Analyst etc. according to type of the project)	Project Manager base on confirmed Project order and Specified offer based on client's needs elaborates Project specification, Project plan and selects Production Team Production team is informed about its roles in production process and about the Project plan (primarily deadlines and milestones)

2.	Project realisation	Project specification, Production team involvement and Project Plan	Completion of specific phase of the project or final product completion in case of smaller projects	Project Manager, Production team	Members of production team realise its task according to Project plan and Specification and Project Manager Manages the realisation process When it is necessary Project Manager consults the realisation with client and asks the client about their preferences
3.	Output of production process presentation	Completed specific phase of the project or completed final product	Customer's feedback or acceptance of the completed project by customer	Project Manager, Consultant or CBO	Project Manager presents product to the client in cooperation with Consultant (Sales Representative) or CBO Customer's feedback is received

4.	Project completion	Customer's feedback, Project specification, Production team involvement and Project Plan	Completion of the project	Project Manager, Production team	Customer's feedback determines the completion of the project which is managed by Project Manager and realised by Production team according to Project specification and Project Plan. Project is tested by tester.
5.	Project documentation and launch preparation	Tested and completed project, Project specification, Project Plan	Project documentation, final project presentation	Project Manager	Project Manager elaborates Project documentation and prepares final output's (project/ product) presentation Project is prepared for launch after presentation to client

6.	Launch of the completed project	Project documentation, final project presentation	Launched project and instructed client about the project operation	Project Manager, Consultant or CBO, possibly CEO	Completed project is presented to the client by Project Manager (Consultant, CBO, CEO may assist) Project is launched by Production team To client is delivered completed work and possibly access to the administration of application by Project Manager and Project Manager manages training of client or client's employees
7.	Payment for the project processing	Invoice	Payment from the client collection	Office Manager, Accountant, Consultant or CBO, CFO, possibly lawyer	Invoice for the project is billed by Office Manager according to the agreed price to the client and client's payment is checked by CFO If the payment is not collected in due date, CBO/ Consultant demands the payment till client pays for the invoice (lawyer may be incorporated)

8.	Follow-up cooperation	Proposal for further cooperation	Contract confirmation	Consultant, CBO, Project Manager	When the project is completed, Consultant/ CBO in cooperation with Project Manager may strive to arrange a follow-up cooperation with client (support for the project, further expansion of the project or offering other services) Result of the striving to initiate follow-up cooperation may be confirmed order from the client

3.1.5 The key success factors of the principal IT Logica's processes identification

Improving the process requires to identify key or critical success factors of the process. The way how the critical success factors may be determined differs according to the authors. GANDHINATHAN, R. and KARUPPUSAMI (2006, p. 376) propose systematic approach that requires the knowledge of quality control tools (largely quantitative) to identify problems in principal process. GANDHINATHAN, R. and KARUPPUSAMI (2006, p. 376) "seven basic quality control tools" consist of:

1) Process flow-charting – what is done?
2) Pareto analysis – which are the big problems?
3) Cause and effect analysis – what causes the problem?
4) Histograms – what does the variation look like?
5) Check sheets/ tally sheets – how often does it occur?
6) Scatter diagrams – what are the relationships between factors?
7) Control charts – which variations are to be controlled and how?

Source: GANDHINATHAN, R. and KARUPPUSAMI, 2006, p. 376

In case of IT Logica were indentified two main processes

1) Process of order acquisition
2) Production process

Generally as key success factors of principal processes could be considered established long-term and short-term company's objectives, measurable objectives and regularly measured objectives by responsible person, defined indicators that enable measuring of company's objectives, output of measurement continuously adopted into operation of processes, specified roles of participants in the processes, competent and motivated responsible person to conduct continuous improvements, elaborated process procedure, clearly defined responsibility for processes, set a standards of performance, performance measured by indicators, critical indicators watched by company's management, regularly done key processes analysis by internal and external analyst as

was described in IT Logica process analysis or as is presented by GARG, GARG and KUMAR (2011, p. 37).

Specific key success factors of IT Logica's are:

1) Acquisition of customer who is willing to cooperate with IT Logica
2) Identification of customer's needs
3) Offering a product or service that satisfies customers needs
4) Signing a contract for project realisation with customer
5) Profitable fulfilment of Project specification and Project plan
6) Increased customer's demand based on successful project fulfilment

Subsequent key success factors of IT Logica are common for any enterprises striving to operate in accordance with TQM:

1) Implementation of desire to satisfy customer's needs into all company's processes and sub-processes
2) Increase of customer's satisfaction leading to increase of company's revenues, gross and profit margin
3) Ongoing evaluation of business and production process effectiveness & profitability
4) Effective cooperation of sales, production and back office departments

4. Proposals and contribution of suggested solutions

4.1 Proposed way of implementation TQM in SME service firm operating in IT sector

Based on the general advantages of TQM identified in Why Total Quality Management and Quality Management in service firm part of diploma thesis synthesised with the main outputs mentioned in the parts of Process analysis of SME providing IT services and Specifics of SME is created proposal for implementation of TQM in SME service firm operating in IT sector.

Decision to implement TQM is crucial long-term act which fundamentally influences entire organisation and requires involvement of all level of organisation structure. Therefore implementation of TQM has to become part of long-term strategy of organisation, be incorporated in both long-term & short term objectives of company and affect mission and vision of company as well. TQM implementation has to be precisely planned process where all probable consequences are evaluated and anticipated. Involvement of employees has to be considered as non automatic thing which could not be directly instructed but has to be achieved thanks to guiding the employees and explanation of benefits for each member of organisation. TQM implementation has to respect and emphasise the characteristics and advantages of SME service firm operating in IT sector. For TQM implementation has to be selected professional team experienced in change management that elaborates TQM implementation proposal.

To develop real and applicable proposed way of TQM implementation in SME service firm operating in IT sector would be presented recommendation valid for TQM implementation in IT Logica which could be after certain level of abstraction suitable for applying in other SME providing IT services.

The basic of TQM implementation is establishment of goals of implementation.

Vision and scope of TQM implementation in IT Logica

1) Fasten the delivery of products and services
2) Systematically record client's requirements
3) Improve the quality of product & services, decrease error probability
4) Explicitly realise approved project specification and plan
5) Increase customer satisfaction, acquirement and retention

Once the customers are attracted, it is important to focus on satisfying their needs. In case of IT Logica faster delivery of products and services can be achieved by implementation of system which would after acquisition of order from client directly delegate on Project Manager the duty to initiate the realisation process. If the production process would not start in given period of time, Project Manager and then Top Management would be notified. To systematically record clients' requirements which might increase customer's satisfaction, acquirement and retention IT Logica may employ Helpdesk system where would clients record their requirements and the task would be automatically delegated to responsible person. If the requirement would not be fulfilled in defined time period, responsible person, then Project Manager and finally Top Management would be notified. Improving the product or services quality might be in case of IT Logica achieved by implementation interactive system for production management where would be provided exact project specification and project plan, roles of each realisation team member would be strictly defined and output of the programming would be saved in independent versions for each stage of development. As highly recommended system based on process analysis of IT Logica is selected IBM Jazz Rational system.

Formulation of expected benefits of TQM implementation is crucial for key processes identification.

Business objectives of TQM implementation in IT Logica

1) Fasten, give precision and automate billing of support
2) Use up full production capacity increases turnover of company
3) Decreasing cost of support and change request management

4) Elimination of problems in dealing with change request and sustainability of solutions
5) Continuity in the development of applications

Previously mentioned interactive system for production management would be also used for accurate planning of production capacity. Project Manager and Top Management would be able to control the workload dedicated to each member of production team in time duration and evaluated his/ her contribution in financial indicators. Also previously mentioned Helpdesk system that could be considered as specific kind of Customer Relationship Management system would be interconnected with production management system accounting system. Once the customer's requirement is recorded, task would be directly delegated to Project Manager and realisation team who would fulfil the task and then the accounting system would automatically bill the agreed price to the client. If the invoice is not sent to client or paid in defined time period, Top Management will be notified. Personal responsibility of each part of development process and financial incentives for improving internal application like Content Management System plus more accurate communication with client thanks to Helpdesk system would eliminate the number change request. Utilization of production management system will make the production process more stable, reliable and effective. Incentives for employees would help to incorporate continuous improvement principle in production process. Therefore change request would be professionally and efficiently solved and solution would be sustainable.

To define responsibility and owners of processes, to engage employees into TQM implementation stakeholders have to be identified.

Stakeholder identification in IT Logica

1) CEO, CFO, Sales Director, Production Director (Top Management; not all positions are taken by full-time employees but competences has to be clearly defined)
2) Project Manager, Office Manager (Middle Management, Front Office)
3) Graphical designers, Developers, Programmers, Testers, Analysts (Production team)
4) Sales Representative, Consultant (Sales Team, Front Office)

5) Accountant, Lawyer, Back Office, Support Staff (Back Office)
6) Customers, Suppliers, Knowledge Donor, the state, end users etc.

Professional Job Description has to be elaborated for each position held in organisation. Tasks have to be efficiently distributed; roles and responsibilities have to be clearly defined for each member of the team. According to the size of IT Logica (totally 21 people including stable freelance members of the production team) some team members might held more than one role in the organisation. Therefore priorities of the duties for the multiple role position have to be defined and the task or responsibilities cannot be in contradiction. Nevertheless multiple role positions do characterise SMEs and clear definition of responsibilities & objectives of the position enable effective use of Human Resources without negative consequences on performance of enterprise. TQM implementation is at the beginning demanding for Top Management, than the strain goes to the middle management whose members should be prepared for the TQM implementation both in knowledge and capacity. Project Manager may have facilitated common agenda by Project Leaders selected from the production team and by Office Manager in order to dedicate required time for TQM implementation.

TQM implementation is realised like a project which incorporates entire organisation. Project manager may be internal or external but especially SME should cooperate with external TQM expert who is not influenced by operating blindness.

TQM implementation plan for IT Logica

Project Plan elaborated by expert on TQM and approved by Top Management

1) Introductory analysis to define initial state of company and targets for changes and improvements
2) Timetable of TQM implementation
3) Designing of Quality Management (procedure and responsibilities)
4) Risk Analysis to develop Risk Management Proposal (procedure and responsibilities)
5) Design of covering expenses connected with TQM implementation as for SME is Cash flow management crucial discipline
6) Cash flow analysis and Cash flow Management Proposal (principles, procedure and responsibilities)

7) Design of production process (categorised according to currently offered product and services by organisation) focused on functionality, reliability, usability, efficiency, maintainability of solutions, portability of task in production process
8) Testing of functionality, reliability, usability, efficiency and sustainability of newly developed processes proposal
9) Defining roles in processes that enable portability of positions (roles have to be connected with defined position not with specific actually employed individuals)

IT Logica does not have experienced TQM expert within its organisation therefore should employ external specialist who would elaborate the TQM implementation plan and who can moderate the process of implementation. Recommended is professional consultancy company or expert from University. Vision, objectives and expected benefits has to be set by Top Management and then TQM analyses entire organisation to propose TQM implementation plan as is it described in previous paragraphs. Timetable of TQM implementation in case of IT Logica consist of development of goal and objectives of TQM implementation, analysing the organisation, implementation of interactive and interconnected information system (Helpdesk, production management system, improved accounting system), re-defining roles, tasks and responsibilities for each position in organisation, introducing new control mechanism and motivation plan, evaluation the results achieved thanks to TQM implementation. Entire process of TQM implementation is long-term task but should not exceed one year. Even maintenance of TQM is ongoing process as continuous improvement cannot be fully accomplished and terminated; TQM implementation has to be accomplished in defined time and has to be measured the outputs of TQM implementation. Quality management in software firm could be only partly achieved by standardisation and introduction of norms. In case of IT Logica introduction of production management system would introduce complex quality management system which is incorporated in production system (e.g. system by itself requires development of application in independent variants and continuous quality testing). When programmer knows what to do and what is he/her responsible for it is easier for them to maintain high quality standard. As development of tailor made application requires exact information, the flow of information is one of the most vulnerable parts of IT Logica's production process. Therefore information flow has to be managed by Project Manager or Project leader. TQM implementation is costly

process and the most expensive part of TQM implementation in IT Logica is the production management system (recommended IBM Jazz Rational). IT Logica as other SME must not endanger Cash flow management by investing in the production management system because it might have fatal consequences for its prosperity. Therefore is highly recommended to spread the investment into longer time period (multiple-phase payments, leasing, loan) and according to current situation in The Czech Republic plus localisation of IT Logica's seat is possible and recommended to use available EU funds. Experienced TQM expert will provide knowledge how to apply for the Grant from Czechinvest's ICT programs. Also the selection of the way how is the production management system purchased might be consulted with TQM expert. For IT Logica is the best option combination of Grant from Czechinvest and multiple phase payments.

TQM implementation in IT Logica should be finalised by introduction regular self-evaluation mechanism of effectiveness of entire organisation measured by ratio calculated by number of hours assigned by workforce divided by overall revenues from provided services (without external expenses). Calculated number should follow decreasing trend after TQM implementation.

For each enterprise are satisfied customers who pay for products or services main and critical success factor therefore TQM implementation has to emphasise business processes. Customer satisfaction is no longer target exclusively for sales department. Quality, continuous improvement and focus on customer satisfaction is common goal for entire organisation and TQM is perfect tool for achieving this required standard to remain competitive on current market. Functional model of Sales Department may not differ among businesses of similar size as much as might be differentiated other processes in organisation. For this reason might be used IT Logica's case as a source of inspiration to propose method for successful TQM implementation in Sales Department.

TQM implementation in Sales Department should follow described objectives and based on objectives develop core processes. Even some of the described objectives and processes may partially exceed the topic of TQM implementation it is very important

that all objectives & processes of each department are reviewed during the TQM implementation, then is verified their conformity with TQM. After the verification of conformity with TQM principles current objectives & processes should be approved and again introduced into the practise.

Notice: IT Logica represents category of B2B customer's orientation companies. B2C companies may have a little bit different core sales processes.

TQM implementation in Sales Department of IT Logica

1) Identification and minimisation barriers to identify customer's needs is critical for offer preparation
2) Customer's needs satisfaction leading to increase customer's demand because increase of customer's satisfaction is connected with increased expenses that has to be covered by increased sales of products or services
3) Increase of customer's satisfaction has to proportionally increase company's revenues, gross and profit margin
4) Evaluation of Sales Department effectiveness and profitability has to be ongoing process based on measurable and objective targets fulfilment including both soft and hard, short-term and long-term criteria
5) Intentional implementation of desire to satisfy customer's needs into all processes and sub-processes of Sales Department
6) Analysis of the phase and level of relationship & cooperation with the customer meaning providing to each client care appropriate current stage and level of cooperation (for some client smaller increase of effort of Sales Department may generate significant increase of sales figures on contrary huge effort of entire Sales Department may not bring any correspondent growth in sales figures in case of different client)
7) Effective cooperation of sales, production and back office departments
8) Objectives of Sales Department may be established in cooperation with CFO. CFO decision about long-term investment has to correspond with Sales Department operation (especially in case of SME)

9) Effort of sales department should follow both short-term and long-term projects to optimise the Cash flow income into organisation (especially in case of SME)

Tailor made web based application has to strictly reflect customers' needs and identification of customers' needs is crucial for order acquisition. Therefore Sales Representative main tasks are clients' needs identification and estimation of price that would be client willing to pay for satisfaction of needs. Even this personal skill exceeds the TQM by itself; complex Customer Relationship Management system may facilitate this process by providing information enabling to indentify the customers' needs and estimation of appropriate price which is still profitable for the company. Therefore IT Logica should include into Helpdesk another CRM tools like knowledge database of possible client's needs and solutions, knowledge database of profit margin generated from different types of orders. Helpdesk system should be able to track process of order acquisition to evaluate and based on this information should be stimulated the effort to continuously improve the effectiveness of Sales Department. Helpdesk (CRM) system should summarise and enable to plan sales figures like total revenues, profit margin and profitability of orders. Also Helpdesk (CRM) system of IT Logica should track both soft and hard information about clients (including the phase and level of relationship & cooperation with the customer) and present targets for Sales Department in both short-term and long-term projects. Based on the Helpdesk (CRM) system objectives of Sales Department may be established in cooperation with CFO and CEO, then uploaded to Helpdesk (CRM) to be followed in everyday practise. Sales Department should be trough interconnected systems able to delegate tasks to another Department in order to satisfy clients' needs as clients' needs satisfaction is common goal of entire organisation (only the needs of client who is paying for its satisfaction). Interconnection of Helpdesk (CRM) system with project management system and accounting system would facilitate the cooperation among the department as the important data would be simultaneously shared.

Crucial for TQM implementation success are employee's quick adaptation to using company's system (Helpdesk system, project management system and accounting system) in everyday practise and utilisation of system has to be in accordance with work-flow of the organisation.

As was described in this chapter, TQM implementation in SME service firm operating in IT sector should start from Top Management by defining vision and expected befits of TQM implementation. After stakeholder identification should be set TQM implementation plan and its fulfilment has to dedicate special attention to TQM implementation in Sales Department.

According to possible extent of diploma thesis is not practicable to go deeper in proposal which is one of the reasons why proposal for TQM implementation in SME service firm operating in IT sector may be used by any SME company. Another reason is the fact that TQM principles are common for most of companies.

4.2 Key Success Factors of TQM implementation in SME service firm operating in IT sector

Output of literature review is cognition that key success factors of TQM differ from one author to another author. Similar discovery is presented by TARÍ (2005, p. 186). Nevertheless both the literature review and analysis of IT Logica has proved that the most critical factors of TQM implementation are common for different authors and companies as well. To develop Key Success Factors of TQM implementation in SME service firm operating in IT sectors needs to be abstracted from specific features of each author or company. Therefore prospective application of generalised Key Success Factors of TQM implementation in company would have to start with specification of general principles according to actual situation in the specific company.

Based on critical literature review confronted with process analysis of IT Logica is compiled list of Key Success Factors of TQM implementation.

General principles which has to be followed in order to succeed with TQM implementation are customer satisfaction orientation, defined goals for quality and policy how should be quality checked. Continuous improvement has to be considered as an argument for acceptance changes and proposals. One of the most important targets is product or service design process optimisation. Further Key Success Factors of TQM

implementation is Top Management's and Employees' involvement. Top Management's involvement specifically means active participation of Top Management on defining quality policy, Top Management commitment for long-term following of TQM principles and the responsibility of Top Management for successful TQM implementation. Employees' involvement means active communication of information how to achieve the improvement, regular and honest reporting according to set rules, building teamwork structures focused on process improvement, building positive relations among employees and active participation on TQM implementation. On the other hand to achieve employees' involvement has to be emphasized employee's satisfaction, corresponding employee empowerment and investments into employee training & learning. Key Success Factors of TQM implementation considering management issues are strategic planning incorporating TQM sustainability, continuous customer and process management improvement, focus on supplier quality and relationship management and TQM principles has to influence decision making in areas of financial management, human resource management and business development. Important Key Success Factors of TQM is both internal and external interaction of organisation. From external interaction should be systematically executed benchmarking, build public and social responsibility, cultivated supplier partnerships in order to improve supplier performance, customers' requirement should be integrated into the proposals for improvements. From internal interaction should be systematically stimulated cooperation within and among the department because customer satisfaction or continuous improvement could be hardly achieved by isolated work of individual departments. Last not lest chapter of Key Success Factors of TQM could be called quality issues. Firstly has to be properly defined role of the quality in each department and defined quality standards. Corporate culture has to adapt quality as one of the characteristic of TQM; design of quality management has to support continuous improvement that should be systematically measured. Data about quality should be collected and evaluated and in suitable cases SPC (statistical process control) may be used, also way of inspections of quality has to be clearly defined. Quality circles are suitable manner for improving product or service quality. Quality of operation has to be planned and fully controlled process and generally organisation which has implemented TQM could be called as quality related organisation.

Mentioned TQM principles are common among different companies, sectors, etc. But the importance and the ranking of principles differ in specific situations, companies, industries, etc.

Critical review of literature confronted with realty which in SME company operating in IT sector has become groundwork for Key Success Factors of TQM implementation proposal.

To start with quotation of GARG, GARG and KUMAR (2011, p. 36): "TQM is a modern management philosophy and a journey not a destination". Based on analysis of IT Logica the most important elements of TQM success are managers and employees' commitment, customer's satisfaction and continuous improvement principles. On the other hand these principles are very hard to successfully implement in organisation.

As is aimed to describe Key Success Factors of TQM implementation in SME, firstly has to be mentioned resources. For SME is critical success factor Cash flow management and efficient use of available resources including the time of the employees. TQM implementation cannot break a harmony (incomes, expenditures; employee's input, output) that SME company strives to maintain in order to be successful.

Key Success Factors of TQM implementation is setting the quality as a target of each department. In case of SME not many real departments actually create the company but each role in organisation has to have established quality criteria which are continuously measured and reviewed applying both hard and soft indicators.

Processes in organisation have to be optimised for specific operation of the company. Especially in SME is important to achieve that processes do not depend on current employees but on the roles which employees fulfil in the organisation.

For implementation and even more for long-term progress of TQM in organisation is crucial acquirement of identification of employees with TQM principles. The need for

employee's identification with TQM principles could be considered as a main difference against ISO implementation into organisation because ISO just re-adjust processes, roles, responsibilities and standards which does not require people orientation as ISO could be enforced in a directive manner.

Customer's satisfaction has to become a measurable target of entire organisation. Thus Key Success Factor of TQM implementation is setting a processes and targets for each role in organisation leading to customer's satisfaction.
Continuous improvement as another Key Success Factor of TQM implementation must not become a general formula repeated at meetings but responsibilities and competences enabling to decide about implementation of improvements have to be provided to employees in a decentralised way.

Specific feature of companies in IT sector is source of the competitive advantage. The competitive advantage in IT sector is highly derived from knowledge management. Development of new products or services which practically may represent enriching the programming skills has to be subordinated customer's satisfaction and improvement of the products/ services quality.

To conclude as a main Key Success Factors of TQM implementation in SME service firm operating in IT sectors are managers and employee's commitment towards TQM principles, targeting entire organisation on customer's satisfaction and in-building the continuous improvement effort into everyday operation of organisation under the consideration of available resources and competitive know-how enrichment.

4.3 Contribution of TQM to SME service firm operating in IT sectors success

As was already mentioned, properly implemented and used TQM increase effectiveness of organisation which reduces required resources that finally means brings cost savings and better profit figures (CARR and LITTMAN, 1993, p. 6). TQM simply helps to

increase quality of key processes in the organisation and quality is according to Frehr (1995, p. 3) the most important attribute that influence decision making of customer.

General contribution of TQM was described in the part of diploma thesis named Why Total Quality Management and Quality Management in service firm. Specific contributions for specific organisation are based on the general contribution of TQM implementation with respect to specific goals and targets which Top Management had declared before TQM implementation started. Therefore contribution of TQM in partly individual according to needs of specific organisation. Nevertheless the main features of TQM implementation could be abstracted for TQM contribution summarisation.

Typically TQM helps to increase customer satisfaction that increases sales growth and retention of acquired customers. Thanks to TQM organisation usually reaches faster delivery of products and services, systematic recording of client's requirements, improving the quality of provided product or services, decreasing error probability and increase effectiveness of project planning.

Continuous improvement and focus on customer satisfaction as common goal for entire organisation contribute to achieving performance above required standard to remain competitive on current market.

Proper TQM implementation brings for organisation higher managers and employee's involvement. TQM also mean deeper consideration of available resources by employees in company's operation and TQM may generate decrease of operating cost. TQM also helps to avoid redundant work as the work-flow is optimised. TQM contributes to focus on building company's know-how applicable for client's satisfaction.

As is described by Hanson and Klefsjö (2003, p**.** 72) SME may profit even greater from advantages of TQM implementation than large organisation because TQM implementation may intensify the advantages of SME like greater flexibility, more effective communication, easier changing the organisation's culture and higher management participation.

According to Hanson and Klefsjö (2003, p. 72) “increased customer satisfaction with reduced amount of resources” generates better financial results which increases the profitability of the organisation.

On contrary the most often reasons of TQM failure are vague definition of TQM and inappropriate implementation process. But these risks could be overcome by real management involvement and managing the TQM implementation process by internal or external consultant who is experienced TQM expert.

Generally well done TQM implementation secures increase of competitive advantage or at least maintenance of competitive advantage for company which is the strongest argument for TQM implementation in current highly competitive market.

5. Conclusions

The main objective of diploma thesis was to prove applicability of TQM concept for SME providing IT services. Generally well done TQM implementation secures **increase of competitive advantage** or at least maintenance of competitive advantage for company which is the strongest argument for TQM implementation in current highly competitive market. As far as TQM implementation does not fail on vague definition of TQM, inappropriate implementation process which or underestimation of expenses which are the main risks of TQM implementation, **TQM implementation was found suitable and beneficial for SME providing IT services**.

Many aspects of SME in comparison with larger organisations like greater flexibility, more effective communication, easier changing the organisation's culture, more precise calculation of explicit cost of TQM implementation and higher management participation are in favour of TQM implementation. Therefore SME that successfully implement TQM may profit even greater from advantages of TQM than large organisation, bearing in mind the basic principles of TQM and the most important principle considering the TQM implementation in SME is **to achieve higher customer's satisfaction with lower amount of resources**. Also implementation of TQM helps SME with roles definition which is very important step for achieving SME's long term economical stability. Even the TQM implementation into SME is not without risk of failure that may in case of SME imply the end of SME's existence. Also financing of TQM implementation might become a difficult task for SME's Cash flow. Nevertheless risks could be with very high probability of success overcome by real management involvement, deliberate financing of TQM implementation and managing the TQM implementation process by internal or external consultant who is experienced TQM expert.

The main reason why service firms need quality management is the competitiveness which forces them to optimise its operation. In many developed countries around 80 per cent of GDP is generated from services. More traditional production companies like IBM, Hewlett-Packard, Xerox, Nokia, ABB and General Electric significantly increase

their income from services and these companies are becoming service oriented thus many of SME service companies do have to compete with global competitors. Quality is defined as the correctness or appropriateness of activity, compliance to a certain standard. Therefore quality management is required in both manufacturing and service firm. TQM is quality management including **adaptation of the company's portfolio based on customer's feedback** which is very important for service firm even the process of TQM implementation is a little bit different from manufacturing practise.

Subsequent objectives of diploma thesis were to identify key success factor of TQM implementation and to briefly propose a compilation of recommended procedures for TQM implementation in SME providing services. Introduced proposals might **serve for both academic purposes and experts from practise**. CEO or owners of SME providing services may derive their decision about starting to consider TQM implementation from presented proposals and conclusion. Even TQM implementation is long-term strategic decision which could not be guided just by use of this diploma thesis, **purpose of diploma thesis is to provide information necessary for underpin the decision to start consider TQM implementation** in SME which predominantly generates revenues from providing services.

As very suitable connection of diploma thesis with real practise served IT Logica, SME providing IT services. **Proposal specific for IT Logica** based on process analysis is **to implement TQM**. Main objectives of TQM implementation in IT Logica are to increase customer satisfaction and revenues by quicker delivery of products & services, systematic recording client's requirements, explicit realisation of approved project plan and to decrease operational costs by automated billing, using up full production capacity and improving management of change request. Implementation of TQM should incorporate **implementation** of interactive and interconnected **information system** (Helpdesk or CRM system, production management system, improved accounting system), **re-defining roles, tasks and responsibilities** for each position in organisation, introducing new **control mechanism** and **motivation plan** for employees. Significant percentage of **cost** of TQM implementation should be **covered by grant** from Czechinvest (e.g. is very convenient program ICT and Strategic services) and the

expenses should be **distributed into longer period of time** in order to avoid negative consequences on Cash flow.

SME providing IT services in the principles of TQM implementation does not differentiate from other cases of TQM implementation in SME providing services firm. Reason why diploma thesis was focused on IT firm were the economical consequences in the Czech Republic as Czech SMEs providing IT services may improve their competitiveness at global market thanks to TQM implementation.

Further extension of the topic might be elaboration of guidelines for TQM implementation that may serve for consultancy companies focused on TQM implementation. Other further extension of the topic could be evaluation of practical benefits of TQM implementation based on representative sample of companies that have implemented TQM or development of the guidelines for continuous improvement of TQM system in organisation managed by internal employees.

Practical contribution of diploma thesis is analysis and confirmation of TQM applicability in explicitly SME firm providing IT service which most likely has not been elaborated yet in the academic field.

To conclude TQM does not only mean that company has adopted standardised the level of operation. TQM implementation in addition to ISO certification process is **optimisation of procedures in order to focus on customer satisfaction and continuous improvement of** the operation. TQM is oriented to the quality level of operation **reached by individuals** employed in organisation.

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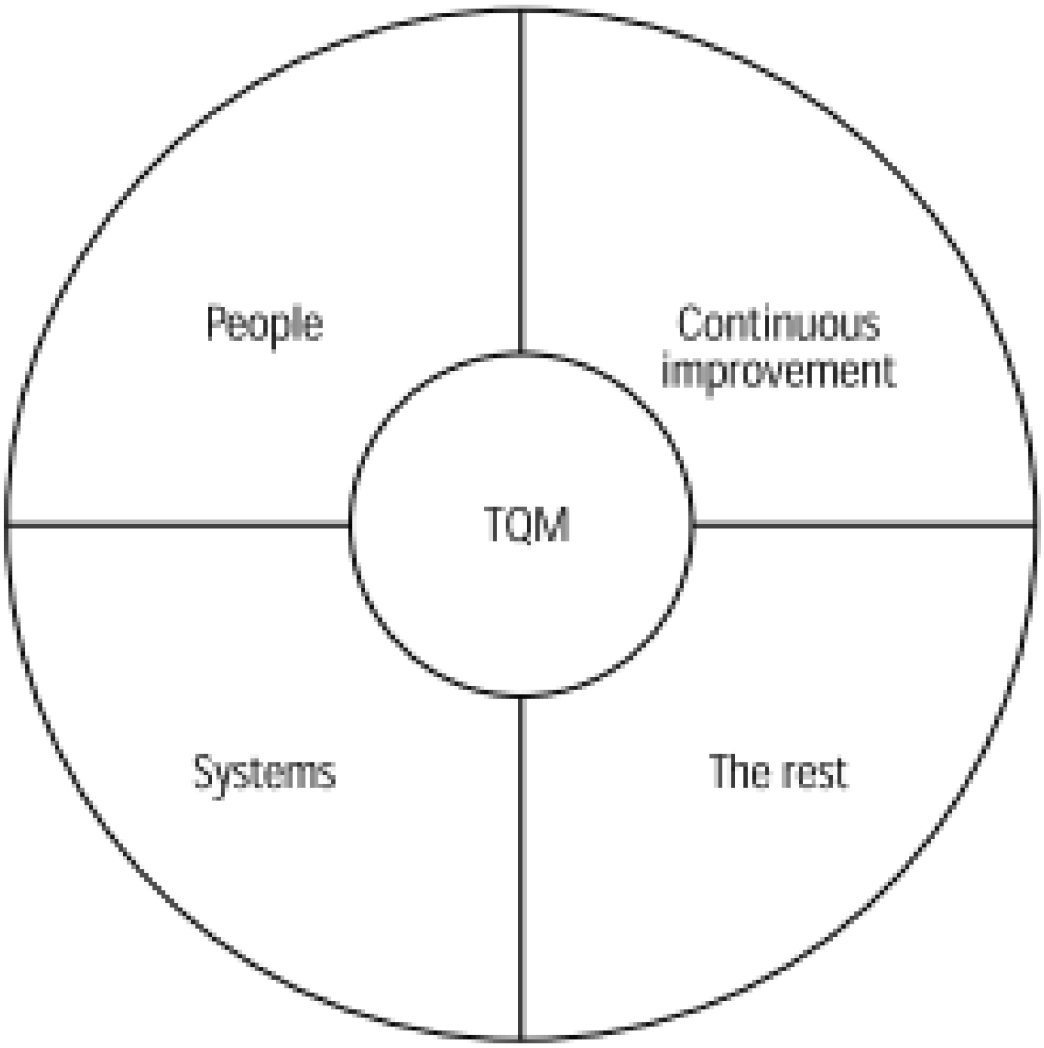
LIST OF APPENDICES

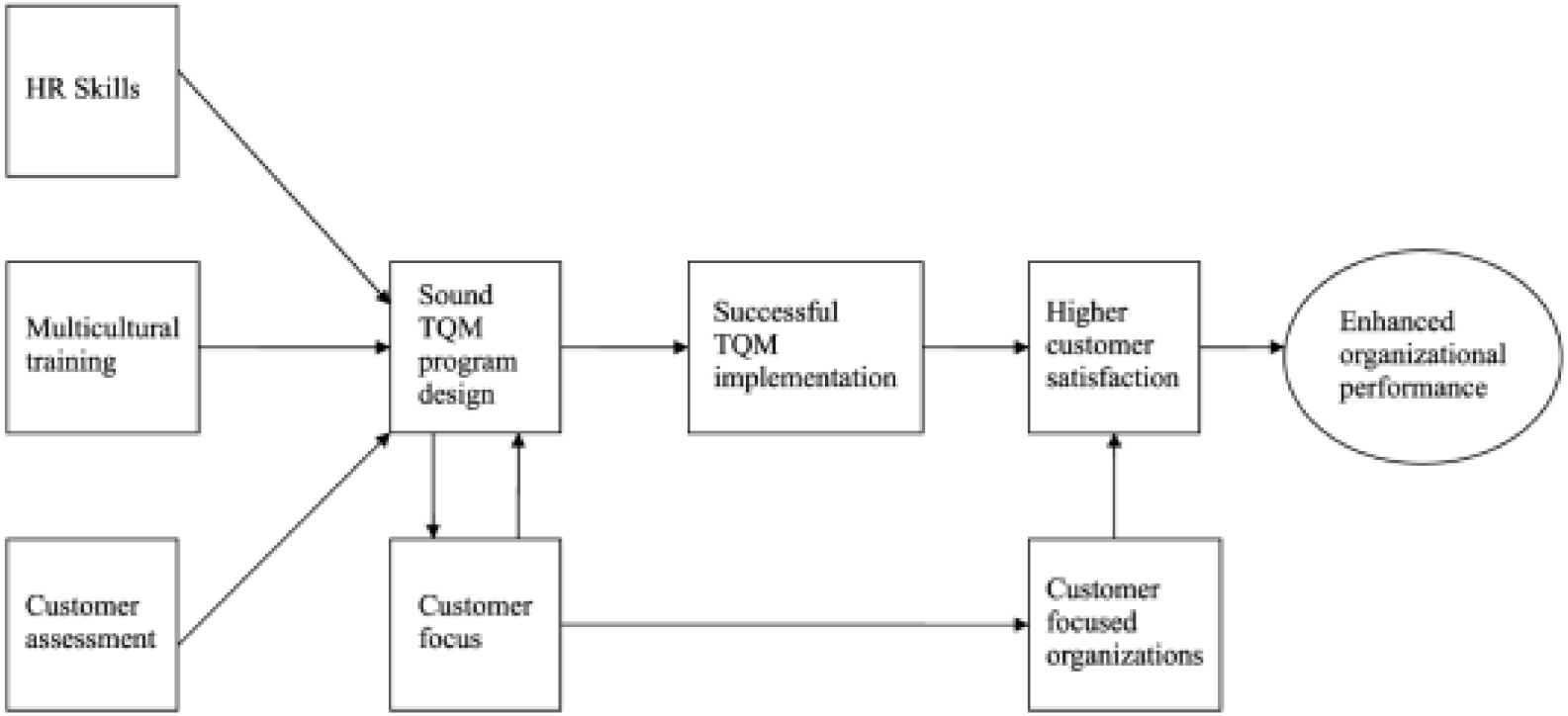
APPENDICES

Appendix number 1: The four main components of a TQM environment



Source: SANDERSON, 1993, p. 12

Appendix number 2: Conceptual model of TQM implementation and its impact on organizational performance



Source: MEHRA and RANGANATHAN, 2008, p. 923