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Project: Identification of IT quality standards and certifications (required on regional markets)

D2: Regional market report on recognized IT quality standards

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CONTENTS

1. Introduction

The purpose of the REG Project is to promote broad based, inclusive and sustainable economic growth in the Eastern Europe & Eurasia (E&E) region through greater intraregional economic integration and harmonization in the E&E region and other markets. Project activities focus on improving competitiveness and increasing financial sector stability by promoting economic integration within the region and building economic linkages to the EU and other markets. The main outcomes for the IT sector within the REG project should be: increased competitiveness and ability to sell in EU markets through new standards and certifications; increased participation in EU projects; and trade missions/B2B support to increase sales to regional markets.

To achieve this objective, REG will seek to increase awareness of and access to relevant IT quality standards and certificates required for competitive presence in the identified key target markets for the IT companies from the Balkan Region.

During the SEE ICT Forum platform in November 2013, representatives from 6 countries (Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia), agreed that the most relevant target markets for the companies from the Balkans are: United Kingdom and Ireland, Scandinavian countries, the Netherlands, Germany, United States, Turkey and Middle East. REG has initiated two surveys to identify the IT quality standards and certificates most required and recognized in these target markets and the gaps in the capabilities of leading IT service and product providers in the Balkan region. Possible IT certification models include: Kanban, SCRUM&XP, CMMI, PSP, ITIL, ITMark, ISO, Cyber Security and Resilience Management, and others.

One survey will identify the current trends in the IT industry standards, models and certification schemes required in the target markets noted above.

The second survey will assess the IT industry standards and certificates prevalent in our region and the gaps from the demand from target markets. In addition, the analysis will include list of national/regional service providers to support firms in obtaining these IT industry standards and certificates for each of the Balkan countries, and general information on the time and costs required to obtain them in order to identify those that the REG project could best facilitate.

The findings from these two surveys will be used to inform future activities of the REG project.

This report is the result of the on-line survey conducted with stakeholders from the regional markets as well as analysis from secondary sources regarding the IT quality standards in the Balkan Region.

2. Executive summary

This report is the result of analysis of the results from the online survey of companies from the selected regional markets of Macedonia, Kosovo, Albania, Serbia, Bosnia and Herzegovina, key conclusions from the *D1: Target market report* and additional research on the topic. It focuses on the identification of the relevant IT quality standards and certifications most recognized and present in the regional markets, and their comparison to the required standards from the target market.

The objective of this analysis is to *identify the current trends in the IT industry standards, models and certification schemes recognized and used in the regional markets as well as to identify the gap between those requested in the target markets. Additionally, it is expected to identify national/regional service providers to support firms in obtaining these IT industry standards and certificates for each of the Balkan countries.*

The analysis was done partly as an on-line survey and partly as a resource of publicly available information and market reports from various sources. In detail the methodology for the analysis is explained in Chapter 3.

The key findings are presented in the following comparative table:

	Target Market	Regional Market	
		Current	**Future**
Organizational standards and best practice frameworks	• CMMI • ISO27001 • ITIL / ISO20000 • SCRUM / agile methodologies • TOGAF	• ISO9001 • ISO27001 • ITIL / ISO20000 • SCRUM / agile methodologies • IT Mark	• ISO27001, • ISO20000/ITIL • ISO9001 • SCRUM / agile methodologies
Verification method	Certification and self-declaration	Certification and self-declaration	
Individual certifications	• Project management • SCRUM master • ITIL master • ISTQB • Technology / vendor specific (Cisco, ORACLE, Microsoft, SAP, etc)	• technology / vendor specific (Microsoft, Cisco, IBM, Oracle, Google, etc) • PMP • ISO27001 LA • ITIL foundation • SCRUM	• ITIL • SCRUM • PMP • ISTQB • technology / vendor specific

This comparisons shows that the ***regional markets are not far off in terms of being aware*** of the recognized IT quality standards and best practice frameworks, but in terms of actual implementation or obtaining a specific certification, they are a bit legging behind. Additionally, it was identified that part of the companies that have certain certificates are not using them in full extent i.e. are not using them to promote the quality of their IT services or to build their image, but more as a certificate to fulfill legal obligations or to meet a procurement requirement per se.

To bridge this gap, it was identified that ***to some extent there are available local/regional service providers for training, consulting, certification and financial assistance***. But, for some standards and best practices such as TOGAF, almost no service providers exist

and obtaining the necessary knowledge or getting the certification abroad just adds to the even initially high costs.

Brief presentation of the previously mentioned standards and certificates is given in the following chapters.

2.1. Key standards and best practices overview

ISO9001 – Quality Management System

Source: http://www.iso.org/iso/home/standards/management-standards/iso_9000.htm

ISO9001: quality management system standard is a certifiable standard published and managed by International Standards Organization. ISO 9001 specifies requirements for a quality management system where an organization:

- needs to demonstrate its ability to consistently provide product that meets customer and applicable statutory and regulatory requirements, and
- aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

All requirements of ISO 9001:2008 are generic and are intended to be applicable to all organizations, regardless of type, size and product provided.

ISO27001 – Information Security Management System

Source: http://www.iso.org/iso/home/standards/management-standards/iso27001.htm; www.27000.org/**iso-27001**.htm

ISO27001: information security management system standard is a certifiable standard published and managed by International Standards Organization. Main focus is on ensuring confidentiality, integrity and availability of organizational information assets including information, systems, processes, people, equipment, etc.

It is paired with ISO27002 and a series of additional standards that serve as guiding documents and provide the industry best practice for ensuring security and privacy of information assets.

ISO27001 is recognized in all target markets, with a varying number of actual certificates issued. Most certified companies are in the target markets: UK, USA and Germany.

CMMI – Capability Maturity Model Integration

Source: www.sei.cmu.edu/**cmmi**/

Capability Maturity Model Integration (**CMMI**) is a process improvement training and appraisal program and service administered and marketed by Carnegie Mellon University. Under the CMMI methodology, processes are rated according to their maturity levels, which are defined as: Initial, Repeatable, Defined, Quantitatively Managed, Optimizing.

CMMI is recognized in all countries, with a varying number of actual certificates issued. Required by many public institutions in USA or their contractors, especially for software development, but significant number of certified companies exists as well in Germany, Turkey, UK.

CMMI currently addresses three areas of interest:

- Product and service development — CMMI for Development (CMMI-DEV),

- Service establishment, management, — CMMI for Services (CMMI-SVC), and
- Product and service acquisition — CMMI for Acquisition (CMMI-ACQ).

ITmark

Source: http://it-mark.eu/

ITmark is a certification scheme specifically designed for IT SMEs. ITmark combines multiple streamlined improvement models into one single scheme. It assesses and certifies the processes in a small organization in three main areas:

- Business Management
- Software, Systems and Services Engineering
- Security Management

SCRUM and SCRUM Master

Source: https://www.**scrum**.org/; http://www.scrumalliance.org

SCRUM is an iterative and incremental agile software development framework for managing software projects and product or application development. Its is organized around the concept that the development team works as a unit to reach a common goal. SCRUM enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members and daily face to face communication among all team members and disciplines in the project.

SCRUM is facilitated by a **SCRUM Master**, who is accountable for removing impediments to the ability of the team to deliver the product goals and deliverables. The Scrum Master ensures that the Scrum process is used as intended.

SCRUM as a framework and methodology for software development is recognized in most of the target market, a bit lower in the Middle East countries. As a framework, it is not certifiable for companies, but companies can declare compliance and commitment to following the methodology. Requirements for SCRUM Master certified staff exists in the target markets but are not mandatory.

ITIL and ITIL Expert or higher

Source: www.**itil**-officialsite.com/

The **Information Technology Infrastructure Library (ITIL)** is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business. ITIL is the base set of best practices giving guidance for the ISO20000 standard for IT service management.

The **ITIL Qualifications** scheme provides a modular approach to the ITIL framework, and is comprised of a series of qualifications focused on different aspects of ITIL Best Practice, to various degrees of depth and detail. The levels include: Foundation, Intermediate, Expert and Master.

ITIL is recognized in all target markets both among the users and providers of IT services. As a best practice framework it is not certifiable but companies can declare compliance and can implement the applicable practices and processes in their operations. Requirements for ITIL certified staff exists in the target markets but are not mandatory. Premium value is recognized in ITIL v3 expert or higher individual certifications.

TOGAF

Source: www.opengroup.org/**togaf**

TOGAF, an Open Group Standard, is a enterprise architecture methodology and framework used by organizations to improve business efficiency. As a framework for enterprise architecture it provides a comprehensive approach for designing, planning, implementing, and governing an enterprise information architecture. TOGAF covers the following levels: Business, Application, Data, and Technology.

As a methodology and framework it is not certifiable for companies, but individuals can obtain professional certification in two levels: Foundation and Certified.

TOGAF is recognized in all target markets, but more so in the countries where the sophistication and scale of the IT systems is on a higher level such a USA, UK, Germany, Scandinavia. Having a TOGAF certified staff is not mandatory but is considered as premium value.

Project Management: PMP and PRINCE2

Source: www.**pmi**.org; www.prince-officialsite.org

Project management is a constant requirement in all medium-term to long-term engagements. As there are various approach to project management, and it is an individual skill, there is no defined organizational certification even though there is an existing ISO standard for project management processes – ISO10006.

There are 2 dominant certifications for project management: **PRINCE2** and **PMP.** Their recognition varies from market to market as PRINCE2 is from UK while PMP is from the USA.

Requirements for PMP or PRINCE2 certified project managers exists in the target markets and are often mandatory. But, as both are rigid and structured, they do not go well in combination with SCRUM so you will not see a requirement for PMP or PRINCE2 certified project manager in companies requiring usage of SCRUM in the development process.

Individual vendor or technology specific certifications

There is a long list of vendor or technology based certifications recognized on the target markets, but they are not so much specific per country as they are per company. Most often found include:

- Microsoft certifications
- ORACLE certifications
- SAP certifications
- Cisco certifications
- Java certifications
- Huawei, Alcatel, Ericsson, …

In such cases, certification is a mandatory requirement as it is a prerequisite for ensuring competence in dealing with the specific technology or product.

ISTQB

Source: http://www.istqb.org/

ISTQB Certified Tester is a standardized qualification for software testers and the certification is offered by the ISTQB (International Software Testing Qualifications Board). ISTQB is international software testing qualification certification organization. ISTQB provides 4 levels of certification: Foundation Level, ISTQB Advanced Level, Advanced Level, Expert Level.

2.2. Recommendations for the IT association and companies

As recommendations for further activities, in summary we defined the following:
- Dissemination of the findings of the analysis to wider stakeholder groups
- Familiarize the stakeholders with less known standards and best practices recognized by the target markets
- Identify financial assistance sources
- Promote the companies that have implemented internationally recognized IT quality standards, and maintain local registers of certified companies and individuals
- Build internal capacities for demonstration of compliance through self-declaration

2.3. Recommendations for further activities by USAID REG project

For the USAID REG project, we recommend the following activities and initiatives:

Initiative 1. With the support of the USAID REG project, extend the existing Quality2IT portal (http://www.quality2it.org/) to include a regional register of certified companies and individuals for the identified IT quality standards, and then in cooperation with the IT associations in the countries promote it both locally to IT companies and externally to potential clients, and maintain it.

Initiative 2. As a critical group of companies from the region have implemented IT Mark but it is not as recognized in the target markets, with the support of the REG project, a guiding document can be created as a tool the companies can use to evaluate compliance to CMMI at a certain maturity level and give identify necessary steps to transition to CMMI and get ready to seek certification, if required by the potential clients.

Initiative 3. Design and implement a regional co-financing/grant scheme for implementation and/or certification of a specific IT Quality standard (both organizational and individual) based on a concrete business case for export to one of the identified target markets. The focus should be on a developed business case so that the companies do their homework prior to the application for the grant and present concrete requirements for the country/sector/client that they are targeting, as well as expected return on the investment. The selected certification/standard can be any of the identified in this analysis. The impact of this initiative can be measured as total value of won projects by those supported companies over a period of 1 or 2 years.

Initiative 4. Organize a regional 4-day training event for TOGAF 9 for a group of 20 people (4-5 per country) from an accredited provider, with vouchers for the exam reimbursable after successful completion of the exam. The companies should pay a subsidized fee for the training no more than an average cost for a similar training provided by a local training center (approx $500 per person). This training will enable creation of an initial regional expertise and certified individuals for this high-cost certification, and it might have a ripple effect for the existing service providers to include such training on their program.

Initiative 5. Due to the high popularity of the SCRUM as an agile methodology for software development, and the recognition of Certified Scrum Master as individual certification in the target markets, and the availability of local or regional providers, as part of the USAID REG project support can be establishment of a voucher system for training and certification, with 25-30% reimbursable costs for training and 50% reimbursable costs for the exam itself, after the successful completion of the exam for CSM. The vouchers would be in the amount of approx $250-$300 for the training and approx $75 for the exam.

Initiative 6. Due to the importance of software testing as part of the quality assurance in software development, and the focus of the export activities of the companies in the region on software development, the Software Tester Certification – Foundation Level from ISTQB is recognized as an important differentiating factor for the companies who what to do export. The topics are suitable for online learning and there are available on-line courses to prepare for the certification. Part of the USAID REG project support can be establishment of a voucher system for training and certification, with 30-50% reimbursable costs for training and 50% reimbursable costs for the exam itself, after the successful completion of the exam for ISTQB Foundation level. The vouchers would be in the amount of approx $150-$250 for the training and approx $125 for the exam.

3. Methodology for the analysis

The methodology used for the analysis was designed in line with the time and resource constraints of the project, but at the same time with the main focus on achieving the objective defined as:

- *to identify the current trends in the IT industry standards, models and certification schemes recognized and used in the regional markets as well as to identify the gap between those requested in the target markets.*
- *to identify national/regional service providers to support firms in obtaining these IT industry standards and certificates for each of the Balkan countries*

For the realization of the on-line survey, primarily identification of stakeholders and motivating them to take part, we have identified experts directly linked with the specific regional market through previous or current experience on that market, education in that market or other close ties. Additionally, we have identified and contacted the key BSO responsible for the ICT sector in each of the Balkan countries covered by this project. To improve the reach of the survey, invitation for participation has been distributed through the BSO and on several online groups for ICT in the region.

Alongside with the survey, detailed documentation research was done to identify and analyze secondary sources of information about the regional markets. A list with references to the used documents and publications is given in *Annex 7.*

3.1. Identification of stakeholders

The main stakeholders to be included in this analysis are the IT companies from the region, as well as their IT association. But in order to get a better picture of the IT quality standards and best practices used in the region, we have identified regional offices of the certification bodies and training centers as important stakeholders.

The experts responsible for the specific regional market identified their stakeholders, and made initial contact. The full list of identified stakeholders per regional market is given in *Annex 1*.

Minimum of 10 stakeholders per regional market were required for a valid analysis.

	Number of stakeholders	
Regional market	*Contacted:*	*Responded companies + associations:*
Macedonia	35+	13 + 1
Serbia	30+	24 + 1
Bosnia and Herzegovina	20+	16
Albania	25+	15+1
Kosovo	25+	18+1

3.2. Design of the survey questions

Based on the initial results from the target market analysis, a list of key identified and relevant IT quality standards and best practices was created and it guided the development of the survey. The survey questions were designed by the entire team of experts based on the objective of the analysis. A separate list of questions was

designed for the IT sector associations. The detailed lists of questions are given in **Annex 2**.

For timely and efficient realization of the on-line survey and ease of manipulation with the gathered data, the online tool Qualtrics (http://qualtrics.com) was used for the design of the online survey.

The invitation to take part in the online survey was supported with a recommended text for the introduction to the survey and the project that with localization (i.e. translation) should have been to the identified stakeholders. Both the text and the questions were approved by USAID and the REG project prior to circulation.

3.3. Conduct of the survey

The online survey was conducted over a period of over one month, even though it was initially envisioned that the realization will be in the period 23.4.2014 – 06.5.2014. The delay was due to the Labor day (01-02.May) holidays in most of the regional markets.

Even though a multitude of stakeholders were identified in each of the regional markets, it was a challenge to get a commitment for the completion of the survey. Nevertheless, with persistent follow-up calls and reminders, as well as with the support of the local IT associations for promotion of the online survey in Albania and Bosnia, we managed to get the responses.

All online responses were documented in the tool and listings of the respondents (identified per IP address) are given in **Annex 3**. The survey was anonymous unless the respondent provided at the end the contact details. **Annex 4** included the contacts of those who provided them as part of the survey. For the purposes of the analysis, the results were aggregated by question and country and for the entire region, and are given in **Annex 5** and **Annex 6** respectively. A summary of the responses is presented in the following chapter.

4. Findings from the analysis

During the survey, **87 responses** were collected from various ICT companies in Albania, Kosovo, Macedonia, Serbia and Bosnia and Herzegovina. In addition, 4 IT associations responded to the specialized survey for such type of organizations. The following chart represents the geographical spread of the responses, and it can be concluded that it is more or less an equal distribution among the covered countries. The "other" represented is a single respondent from Croatia which doesn't influence the results and two respondents from companies from Macedonia whose parent companies are in Netherlands and Slovenia respectively.

In the detailed results in **Annex 6** – the results of the two respondents from the Macedonian companies with parent companies in EU were added to the Macedonian results, where possible, for adequate representation.

In **Annex 5**, the detailed results are represented per question / per country so "others" represent all three respondents.
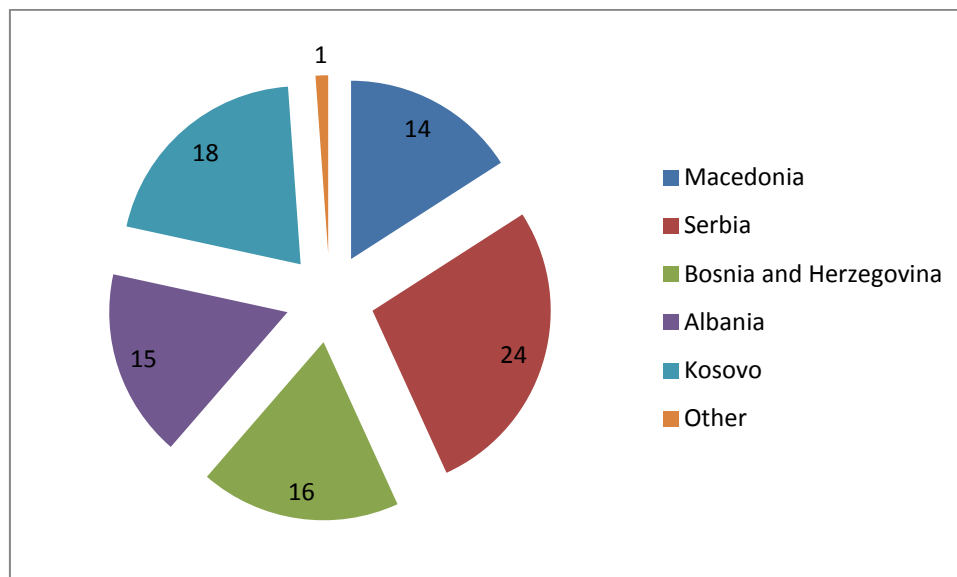

In terms of number of employees: 56% have less than 20 employees while 57% have a turnover of more than 500k euros.

The **portfolios** of the respondents are represented in the following graph. Some of the respondents as well are providing other services.

Portfolio of services and products
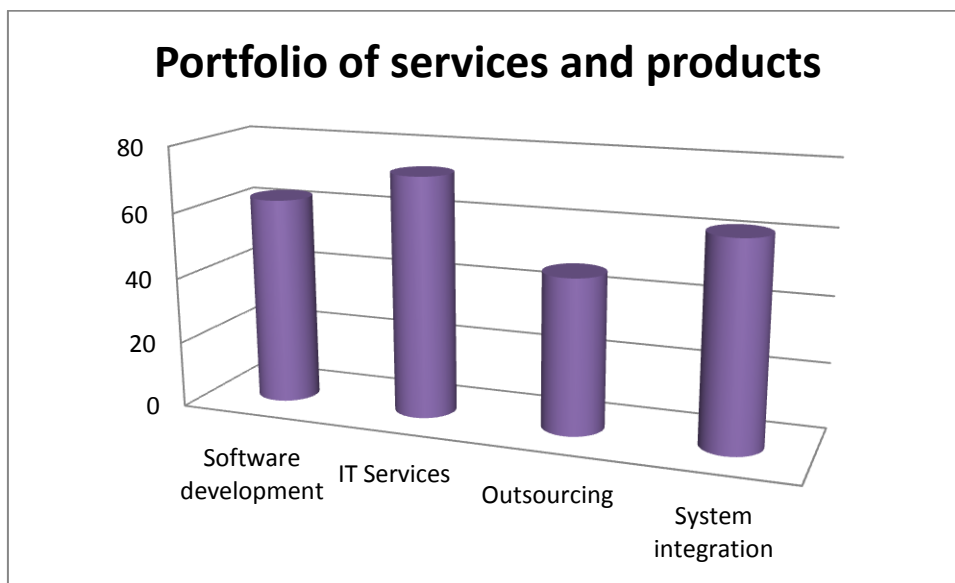
The **target segments** for the surveyed companies are primarily medium and large companies as well as the public sector. As for covered industries, there is no significant grouping among the responses i.e. the industrial sectors where the surveys companies focus their activities range from telecoms and financial services to manufacturing and all in between without significant specialization.

When asked about their **current markets and their future plans for export**, it was identified that 84% of the companies are present on their own markets, but as well operate or export to the identified target markets – mostly in the Balkans, then EU, USA. Regarding the plans for export, majority of the companies indicated the Balkans and EU, but as well USA (31%) and the Middle East (28% of the respondents). The following graph illustrates the collected results:

Current and Future Markets
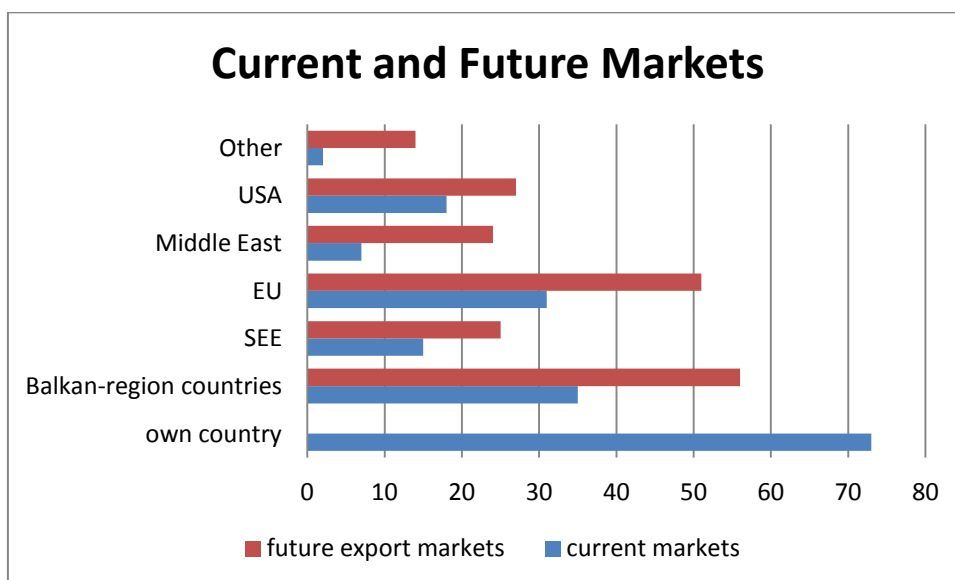
To supplement these findings, we present the results regarding export activities taken from the *SEE IT Industry Barometer for 2014* (detailed reference in **Annex 7**) in which

participated 165 companies from Albania, Bosnia and Herzegovina, Kosovo, Serbia, Macedonia and Montenegro. Based on this report, more than 2/3 of the surveyed companies work with international companies on their domestic market, while only 52% do direct export. The main target markets and their relative importance were identified as described in the following diagram:

Export Market
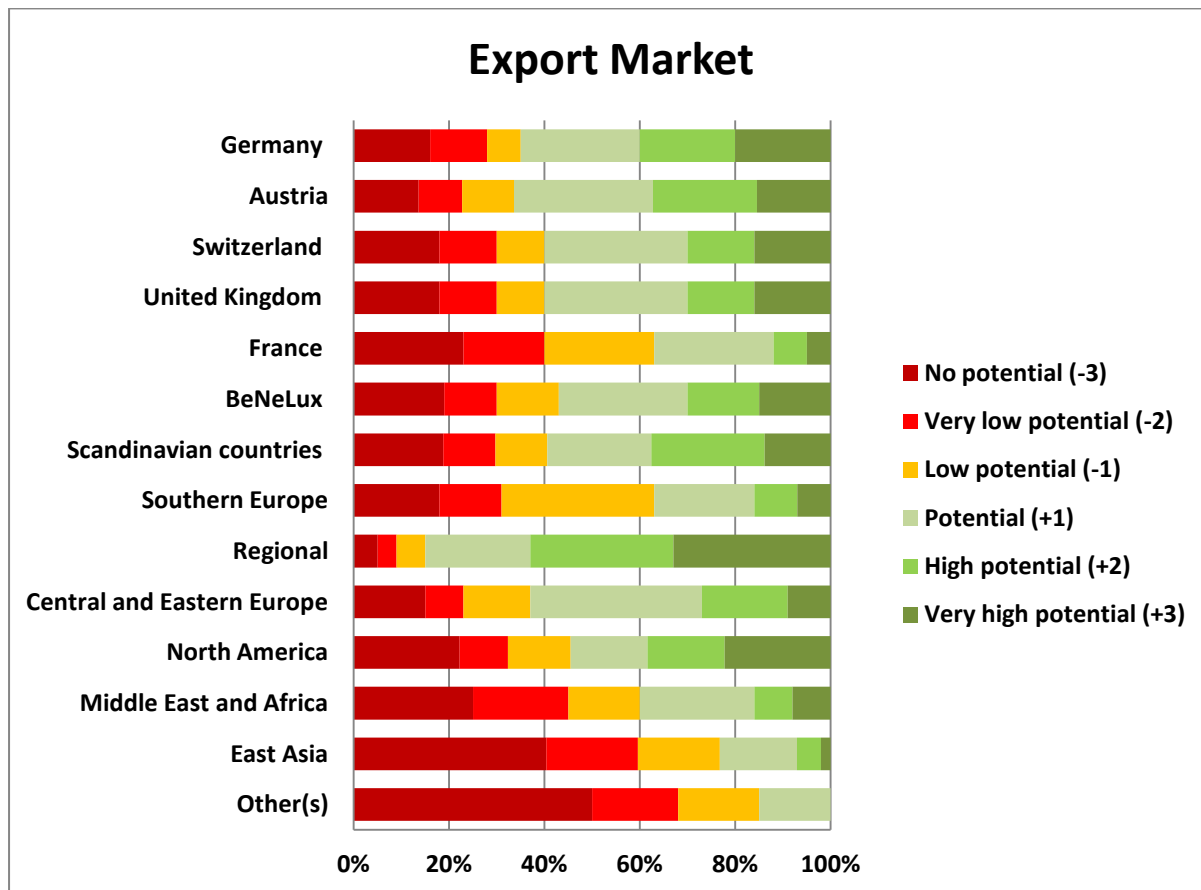
From this can be concluded that the companies from the region find the potential for export in the region itself, but as well in North America, Scandinavian countries, Germany and Austria.

The same report presents that the surveyed companies from the regions identify the quality, price and technical know-how as the three main drivers for their competitive advantage. The detailed results are in the following diagram:

Competitive Advantages
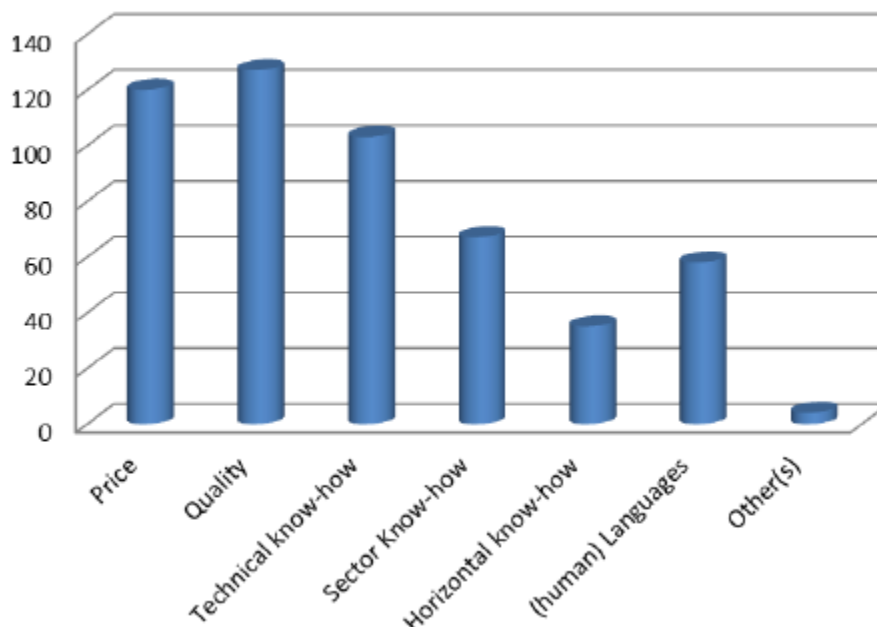
4.1. Currently situation with IT quality standards and best practices

Firstly, the companies were asked about their perception of the *usability of the IT quality* standards. The following graph illustrates their responses:
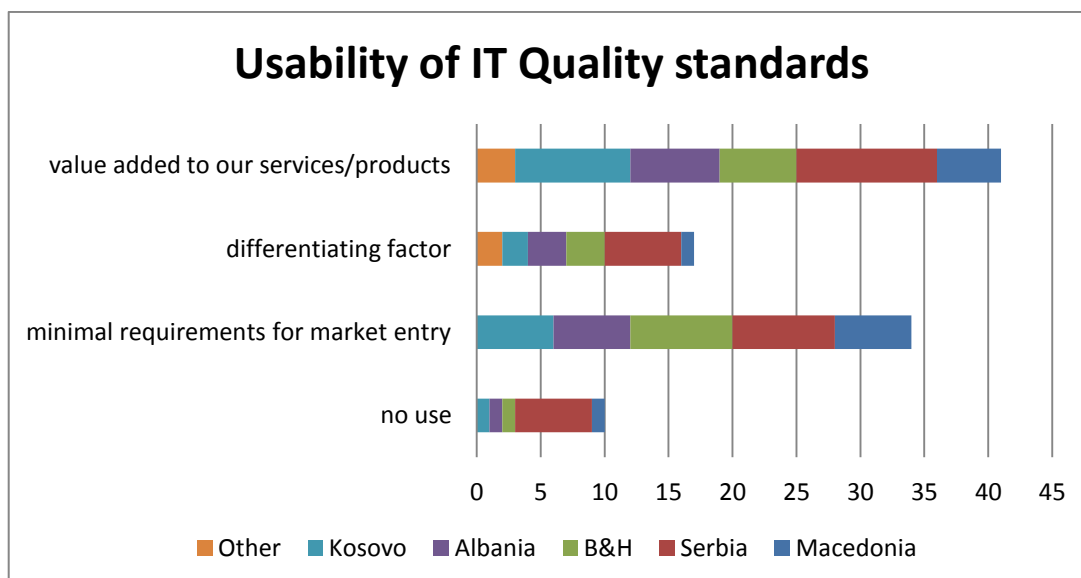
From the results, we can see that 25% of the respondents from Serbia believe that there is no use of the IT quality standards, but in general that is predominantly the lowest opinion. The results demonstrate that almost half of the companies that took part in the survey recognize the IT quality standards as a *value added to their services* and products but as well as a differentiating factor. 40% of the respondents identified that such standards pose a minimal entry requirement for their markets.

Looking into more detail about what IT quality standards they have actually implemented in their work, the following results were gathered:
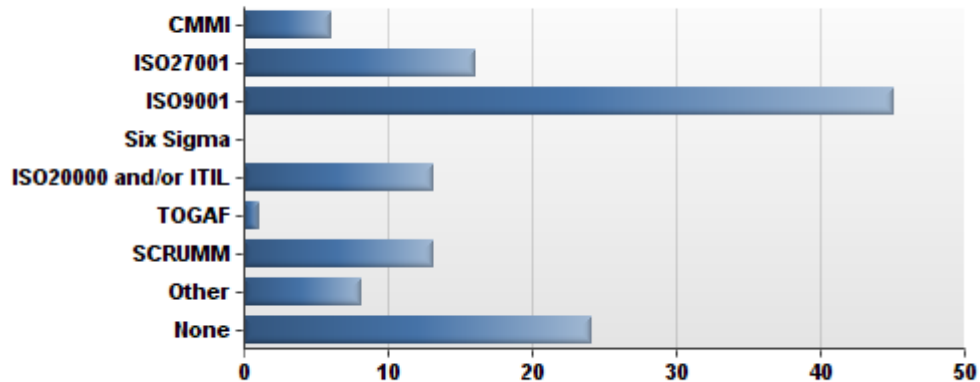

This diagram shows that the ***most implemented standard is ISO9001***, but based on the analysis of the market conditions, we have seen that this situation is driven by the requirement and regulation in the local markets for participation in public procurement. From the more IT focused standards, the next in representation was the ***ISO27001, ITIL or ISO20000 and SCRUM***. Among the other implemented standards and best practices currently implemented were IT- Mark, CobIT, ISTQB.

The method for validation / verification of the implemented IT quality standard differs depending on standard as some are not certifiable for companies, but the most represented is ***independent certification and self-declaration***. 24% of the companies responded that they are audited by their clients.

To supplement these findings, we present the results regarding company certifications taken from the *SEE IT Industry Barometer for 2014* (detailed reference in ***Annex 7***).
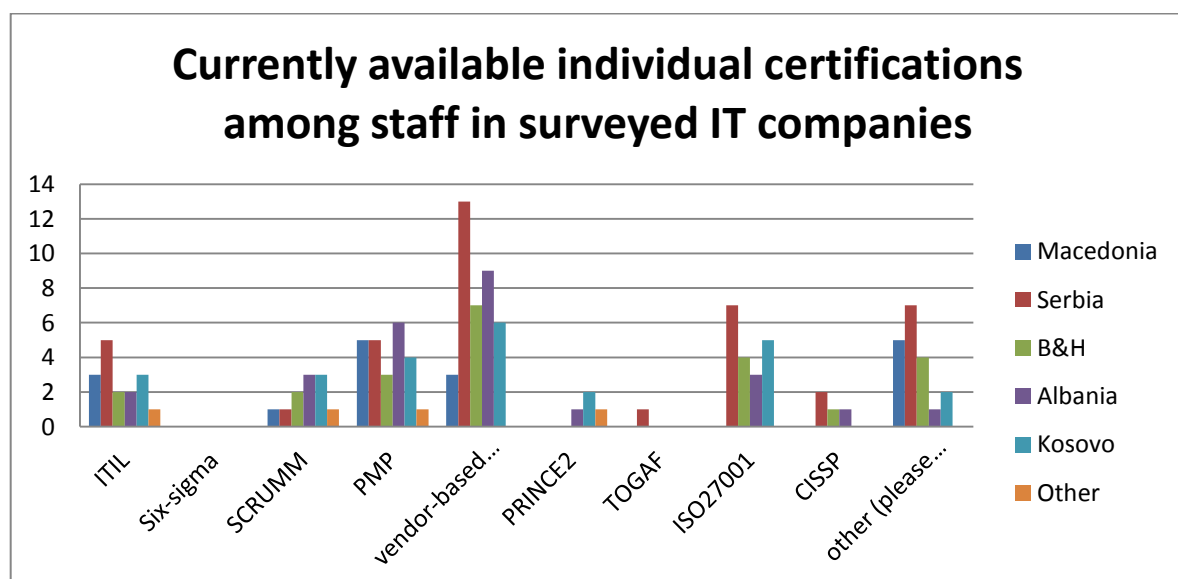
Certification
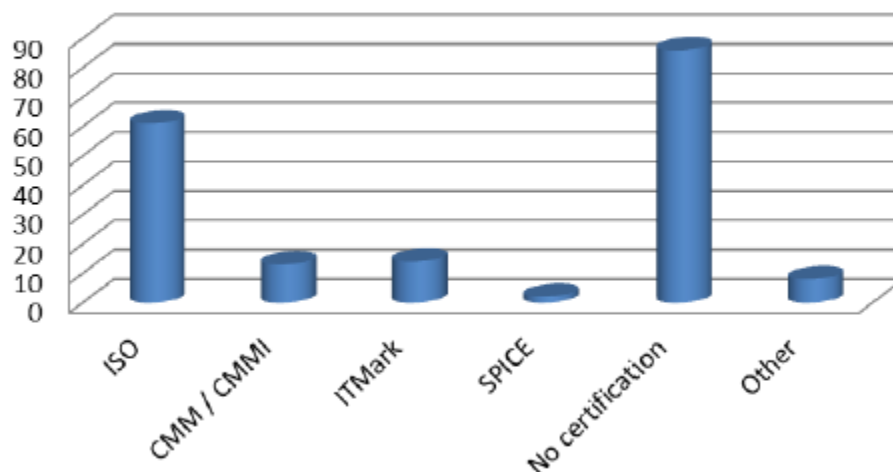
The majority of the respondents indicated that they implemented the standards as internal process and they had external consultant support (78% and 61% respectively). Only 20% indicated that they used donor financial or technical assistance for the process. The majority of the companies believe *that such standards are good to have, but not necessarily critical for market access*. This is in line with the expressed opinion by the majority that the main motive for implementation of such standards is that they contribute to quality of the product /service and in improved efficiency of internal processes.

When asked about the *main issues and challenges* during implementation and then subsequent maintenance of the implemented standard, even though the companies successfully implemented such IT quality standards and best practice frameworks, the main issues during the implementation were in the *implementation costs* and the *level of effort of the internal staff*. In the phase of maintenance of the IT quality standards, the issues of costs remains, but the next more important one is identified as *lack of awareness and recognition on the market* for the standards.

4.2. Individual IT quality standards and certifications

Various surveys have been conducted in the past years regarding the relevant skills among the ICT workforce in the Balkan countries. So, for example in the MASIT's most recent workforce demand survey conducted among the companies of the ICT sector in Macedonia, 74% of the respondents said that professional certification are important or critical for the hiring process (detailed reference in *Annex 7*). Regarding Bosnia and Herzegovina, the results of their *Baseline report for assessment of competences, skills and needs of the ICT sector* (detailed reference in *Annex 7*) show that majority of the respondents identified skills and competences for Android, software engineering, web development, Java, CSS and SCRUM as needed new skills.

Our survey showed that there is a proliferation of *individual professional certificates* among the companies, and that the most dominant are the *vendor/technology specific* ones such as: Microsoft, Cisco, IBM, Oracle, Google, etc. Among the "others" i.e. unspecified certifications the respondents listed CISA (for IT auditors) and ISTQB (for testing).

Currently available individual certifications among staff in surveyed IT companies

The companies identified that they either ***invest in the certification*** of their employees (66%), or hire already certified employees (26%). But it doesn't stop there – after obtaining the certification, they mostly use the know-how to develop and document internal processes, train the other staff internally and use those certified individuals as team leads

4.3. Future plans for implementation of IT quality standards

The companies have good knowledge of their current markets and some perception of their future markets and based on that they have identified their ***priorities for implementation*** of IT quality standards as ***ISO27001, ISO20000/ITIL, ISO9001 and SCRUM***. The following diagram shows the identified standards with priority. Among the "other" standards were PMP, ISO14001, ISTQB, Java, ISO27013, HIPPA, PCI DSS, OHSAS, BASEL, etc. Some of these "other" standards made it on the list because they are seen as e requirement for specific industries such as telecommunications, financial and government.
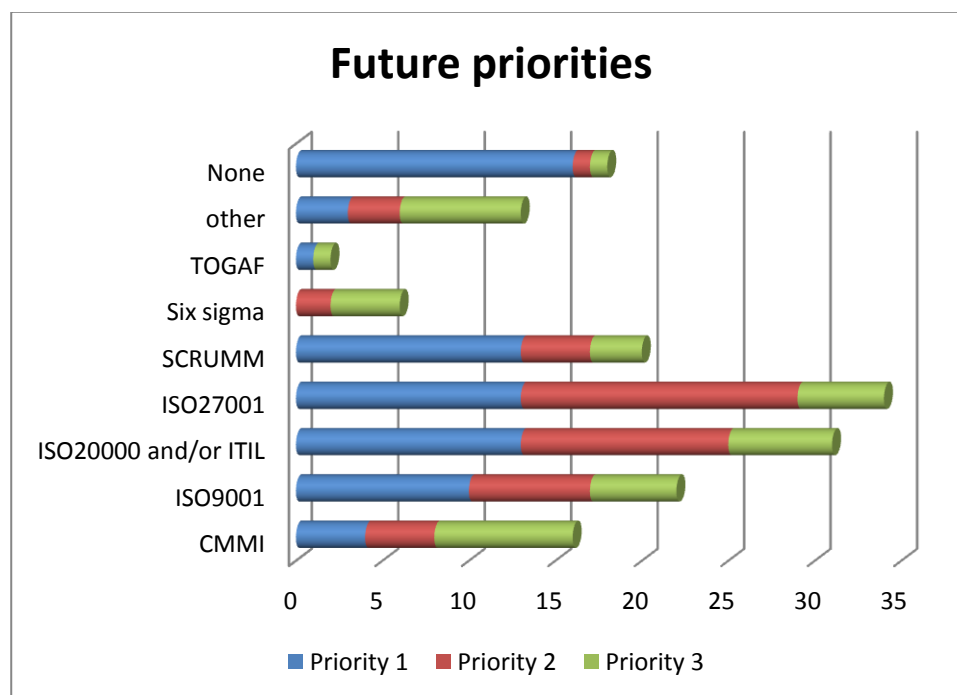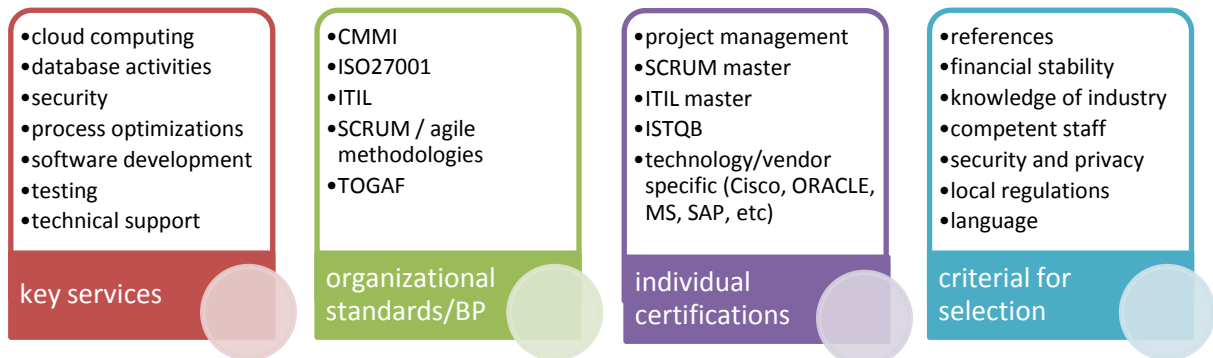

When asked about the expected timeframe, more than 75% answered that they ***plan to start the implementation activities within 6 to 18 months***. But more than half of the companies do not know exactly the related costs, nor have developed a business case for implementation of such standards in the next 2 years. With regard to financing the implementation and certification activities, the responses are split in the middle – 52% with own funds, and 46% with some sort of subsidies (government schema or donor support).

As ***critical factors*** for implementation ***costs and workload of internal staff*** are on the top of the list, while as an implementation methods identified with highest representation were ***external consulting/training assistance and internal self-study***

5. Comparison: Target markets vs Regional markets

The document *D1: Target market report* covers a detailed analysis of the recognized IT quality standards in the target markets of USA, UK and Ireland, Turkey, Germany, Netherlands, Scandinavia and Middle East. Its main focus is on the following four categories: key services in demand for outsourcing, recognized organizational standards and best practices, recognized and expected individual certifications, and criteria for selection of an outsourcing partner. The following diagram gives the main findings in each of the areas:

key services
- cloud computing
- database activities
- security
- process optimizations
- software development
- testing
- technical support

organizational standards/BP
- CMMI
- ISO27001
- ITIL
- SCRUM / agile methodologies
- TOGAF

individual certifications
- project management
- SCRUM master
- ITIL master
- ISTQB
- technology/vendor specific (Cisco, ORACLE, MS, SAP, etc)

criterial for selection
- references
- financial stability
- knowledge of industry
- competent staff
- security and privacy
- local regulations
- language

Based on the analysis presented in *D1: Target market report* **active certificates of organizational best practices and ISO standards** among companies from the ICT sector in the analyzed target markets are: CMMI specifically for software development, ISO9001 for quality management, ISO27001 for information security, ISO22301 for business continuity and ISO20000-1 for service management. The following table depicts the summary values per analyzed target market based on the publicly available information about active certificates issued by the certification bodies.

Target market	Certifications for management systems				
	CMMI	**ISO9001**	**ISO27001**	**ISO22301**	**ISO20000-1**
United Kingdom and Ireland	Low	High	High	Almost none	Low
Scandinavia Sweden Norway Finland	Almost none	Low	Almost none	n/a	Minimal
Turkey	Medium	Medium	Low	n/a	Minimal
Netherlands	Minimal	High	Low	n/a	Minimal
Middle East Palestine Jordan Israel	Low	High	Low	n/a	Almost none
USA	Medium	Medium	Low	Low	Low
Germany	Low	High	Medium	Almost none	Minimal

*Scale: <10: almost none, 10-25: minimal; 25-100: low; 100-200: medium; 200+: high; n/a: no information available

What can be concluded is that even though these standards and best practices are recognized on the markets analyzed, certification per se is not so much present specifically in markets such as Scandinavia.

In addition, the findings regarding individual certifications illustrate that even though there are varieties from market to market, there is a consistency in the required certifications for *project management, agile software development and vendor-based technology*

certifications such as Cisco, Microsoft, Oracle and SAP. In the more developed markets, additional focus is given of security certifications.

When we put these finding with the findings from the conducted online survey in the Balkan region, we can come to the following **_comparisons_** given in order of priority:

	Target Market	Regional Market	
		Current	**Future**
Organizational standards and best practice frameworks	• CMMI • ISO27001 • ITIL / ISO20000 • SCRUM / agile methodologies • TOGAF	• ISO9001 • ISO27001 • ITIL / ISO20000 • SCRUM / agile methodologies • IT Mark	• ISO27001, • ISO20000/ITIL • ISO9001 • SCRUM / agile methodologies
Verification method	Certification and self-declaration	Certification and self-declaration	
Individual certifications	• Project management • SCRUM master • ITIL master • ISTQB • Technology / vendor specific (Cisco, ORACLE, Microsoft, SAP, etc)	• technology / vendor specific (Microsoft, Cisco, IBM, Oracle, Google, etc) • PMP • ISO27001 LA • ITIL foundation • SCRUM	• ITIL • SCRUM • PMP • ISTQB • technology / vendor specific

This comparisons shows that the **_regional markets are not far off in terms of being aware_** of the recognized IT quality standards and best practice frameworks, but in terms of actual implementation or obtaining a specific certification, they are a bit lagging behind. Specifically:

❖ On the regional markets, priority is given to ISO9001. This standard is present on the target markets, but not specifically recognized as an "IT quality standard", since ISO 9001 is general standard for managing quality in all types of organizations.

❖ SCRUM as an agile methodology and framework is known on the regional markets, but a lower % of companies are actually using it in their operations, and the number of certified SCRUM Masters per company is small, if any.

❖ ITIL as a best practice framework and its counterpart ISO20000 as a international standard for service management are known in the region, in some countries even it is included in regulation for some sectors (for example, in Macedonia it is a requirement for IT service providers for the financial institutions). There are significant number of ITIL certified individuals, but only on foundation level (most basic certification grade available), while in the target markets ITIL foundation is considered only a starting point and higher levels of the ITIL certification are valued as proof of competence (for example ITIL expert or ITIL master)

❖ Software testing as a specific service offering is not very recognized or offered by the IT companies in the region and very few certified individuals exist (with ISTQB certificate for example). Such service and certification is well recognized and sought-after both in terms of a service that is being outsourced or as a competence for which certification is required in the target markets.

❖ Enterprise architecture as a framework covering typically four levels: Business, Application, Data, and Technology of Information systems is neglected in the region, while it is well recognized in the target markets. This might be due to the small size and scope of the ICT systems that are being developed and maintained by the companies in the region in comparison to the bigger systems developed in the target

market countries. Such discrepancy leads to lack of recognition of TOGAF as a framework and individual certification in the regional markets, but as well a ritical obstacle for getting involved in design, planning and implementing large-scale information systems.

❖ IT Mark is recognized and present as a framework and organizational certificate among the regional markets, while it is not known on the target markets. In the analyzed target markets the comparable but much more extensive and comprehensive CMMI is the required certification. This preference for IT Mark instead of CMMI on the regional markets might be because of the fact that IT Mark is easier to implement (smaller scope) and that significantly lower costs associated with the certification. But, nevertheless IT Mark is a good stepping stone for later full CMMI implementation at a required maturity level, or even only to show general understanding of the CMMI requirements even though full compliance is not achieved.

6. Way forward – obtaining the required IT quality standards

As a final part of the survey, we asked the companies about the availability of service providers to assist in obtaining them. The following diagrams show the results in general, while availability of service providers for training, consulting and certification as relevant for the specific standards and best practices is addressed in the following sub-chapter.
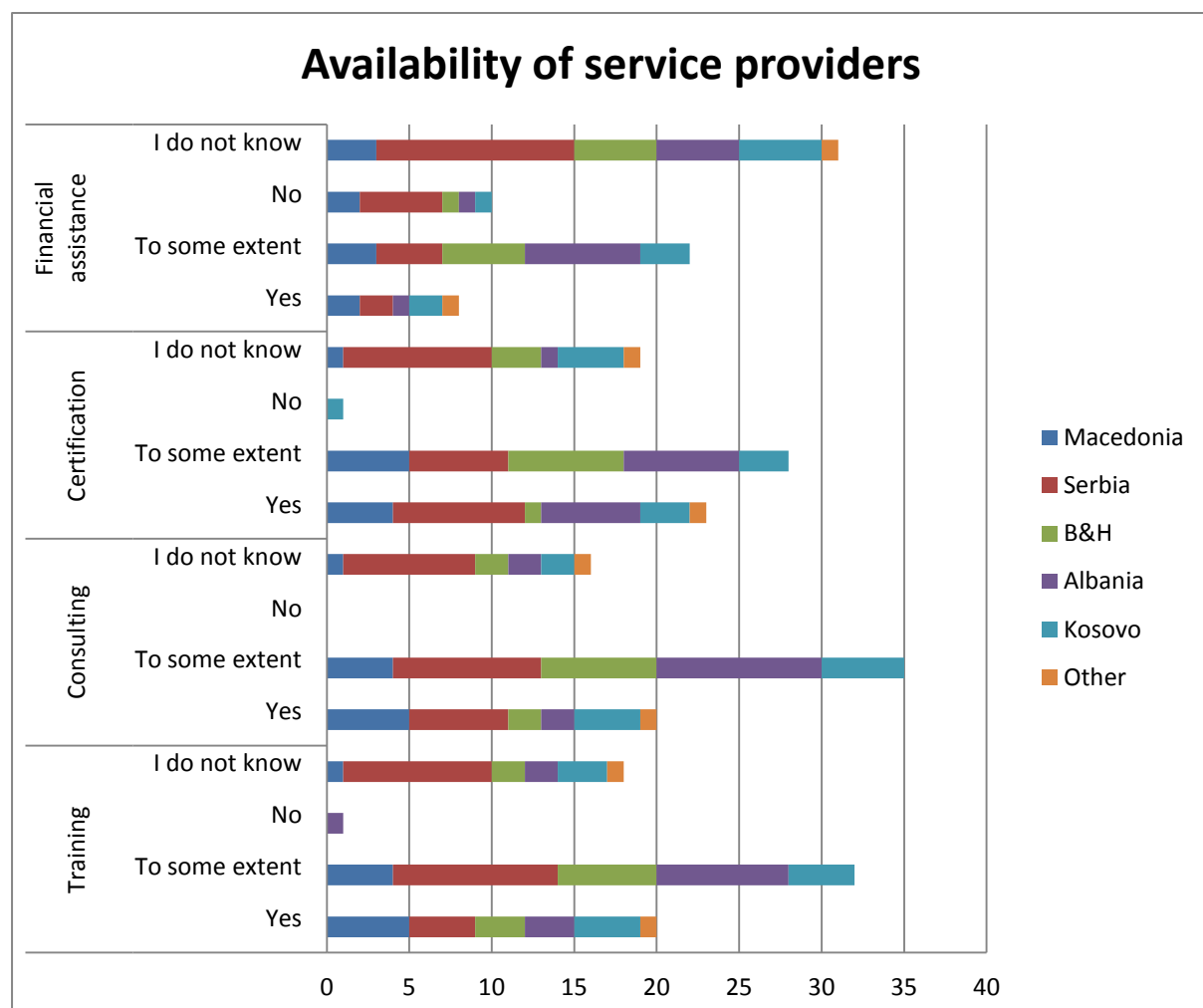
Or specifically per type of service:

Training

Consulting

Certification

Financial assistance
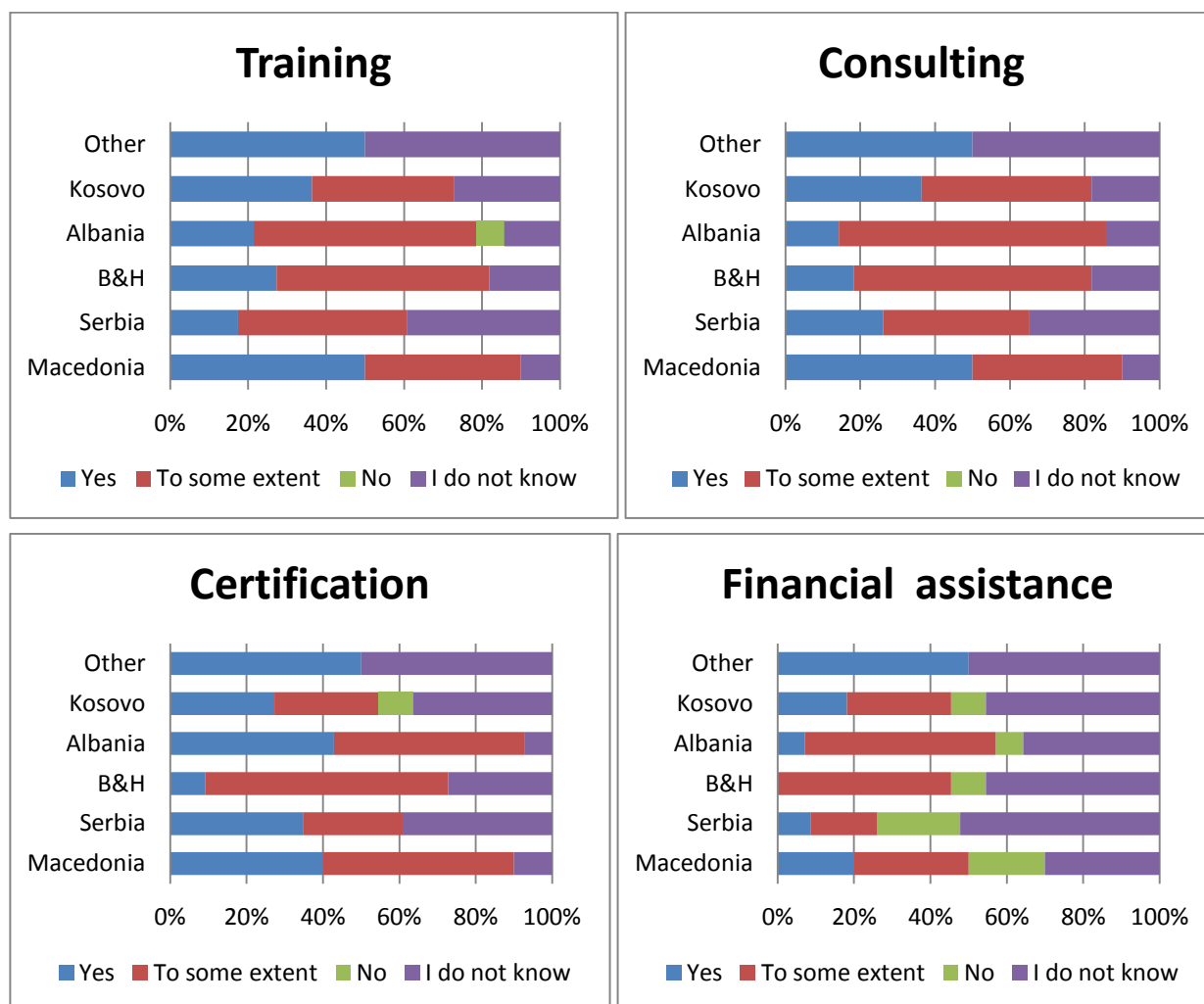
From these diagrams, one can conclude that the companies in the region are in general ***aware about the existence of relevant service providers*** for training, consulting and certification for the IT quality standards of their choosing, but as well that they are aware that for some the service provider are not available locally/regionally such as TOGAF, ISTQB, etc.

As for the financial assistance providers (technical assistance projects, government subsidies, etc.) the majority of the respondents did not know what is available, or know that such assistance is only available to some extent. The main focus of the financial assistance is for the consulting and certification for the ISO standards. For example in some of the countries in the region there is government support for ISO9001, and in most of the countries sin the region the EBRD's BAS program provides co-financing with a limit of 10k euros for consulting assistance for implementation of any type of quality standard.

To support the initiatives for implementation of IT quality standards, we have done preliminary research on the costs and availability of service providers for the identified key IT quality standards in the Balkan region countries.

6.1. Implementation aspects for key IT quality standards

For the several most relevant IT quality standards and certification schemes identified on the target markets, more detailed analysis of the regional market was conducted. One aspect of the analysis focused on the availability of service providers that offer training, consulting

services and certifications for the relevant standards, as well as the price range of these services in the region.

Based on the previous research conducted in the target market the most relevant IT quality standards and certifications identified are: CMMI, ISO27001, ITIL, SCRUM, TOGAF, Project Management – PMP and Prince 2, in no order of priority. Only two of these standards/frameworks represent organization "certification". All the rest are frameworks that are directly reflecting the quality of IT services in the companies, but have certifications schemes for individuals only. More details about the relevant standards, frameworks and/or certificates is given below.

- *ISO27001: information security management system standard* is a certifiable standard for companies published and managed by International Standards Organization.

- *Capability Maturity Model Integration* (*CMMI*) is a process improvement training and appraisal program. Under the CMMI methodology, processes are rated according to their maturity levels.

- *SCRUM* is an iterative and incremental agile software development framework for managing software projects and product or application development. SCRUM as a framework and methodology is not certifiable for companies, but companies can declare compliance and commitment to following the methodology.

- The *Information Technology Infrastructure Library (ITIL)* is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business. As a best practice framework it is not certifiable, but companies can declare compliance and can implement the applicable practices and processes in their operations. *ITIL Qualifications* scheme exists for certification of individuals. The levels of certifications include: Foundation, Intermediate, Expert and Master.

- *ISTQB Certified Tester* is a standardized qualification for software testers and the certification is offered by the ISTQB (International Software Testing Qualifications Board). ISTQB provides several levels of certification: Foundation Level, Advanced Level, Expert Level. It is executed as a course and exam.

- *TOGAF*, an Open Group Standard, is an enterprise architecture methodology and framework used by organizations to improve business efficiency. As a methodology and framework it is not certifiable for companies, but individuals can obtain professional certification in two levels: Foundation and Certified.

- There are various approaches to *project management*, and it is an individual skill, there is no defined organizational certification. There are 2 dominant certifications for project management: *PRINCE2* and *PMP.*

The results from the research conducted by the consultants regarding the availability of service providers on the regional market and related costs are summarized in the table below.

Certifications	Service providers availability		Price range	
	Training/Consulting	Certification	Training / Consulting	Certification
CMMI	Low	Medium	$250 / $10.000+	$5000
ISO27001	High	High	$500-$2.000 / $5.000 - $20.000	$2.000 -$10.000
ITIL (Foundation)	High	High	$2.395	$250
ITIL (Expert)	Medium	Medium	$12.000	$3.400
SCRUM Master	Medium	Medium	$ 900 - $1.100	$150

Certifications	Service providers availability		Price range	
	Training/Consulting	Certification	Training / Consulting	Certification
ISTQB - Foundation Level	Low	Low	$1,300	$250
ISTQB - Advanced Tester Certifications	Low	Low	$1,300 - $2,300	$200
TOGAF	Low	Low	$2.200 - $3.900	$300 - $500
PMP	High	High	$900	$350
Prince 2	High	Medium	$900	$350

The *availability of the service providers* for training, consulting and certification services in the region is marked with 3 levels: low, medium and high. Low availability of providers means that there are providers only in one or two regional countries, or there are only foreign companies that organize training and certifications rarely in the region. High availability means that there are more service providers in most of the countries in the region. As can be seen, for the more basic or general modules, services providers are available in the region for training, consulting and exam. This is the case with PMP, PRINCE2, ISO27001, ITIL foundation. This availability of regional providers lowers the overall cost of implementation. But for the more high-end or "exotic" certificates such as the ISTQB, TOGAF, ITIL Expert, due to the lower demand, there are no providers at the moment, or the occurrence is so rare that the opportunity for the exam or training is at most once per year.

The *time frame for implementation* of the corresponding frameworks/methodologies and obtaining the certifications varies significantly depending on the circumstances and available resources (people, time, finances). The time frame for implementation of management systems in cases where the company implements it with internal resources only can lasts significantly longer than in cases where the system is implemented with support from competent consultants. Additionally, the duration for obtaining an individual certificate will vary depending whether the individual will visit official training course or will practice a self-study approach.

Another relevant aspect that determines the time frame is the level of maturity of the processes in an organization and the level of compliance with certain standards at the beginning of the implementation, or the knowledge, skills and experience of the individual for the professional certificates.

7. Conclusions and recommendations

Even though the companies from the regional markets have identified that their main **_competitive advantage is in quality_** first, price second and technical know-how third, based on the presented results of the survey it can be concluded that there is a **_slight discrepancy_** between the recognized IT quality standards on the target markets and the implemented standards on the regional markets.

The **_target markets_** mostly demand CMMI, ISO27001, ITIL/ISO20000, Project management, SCRUM and TOGAF (listed in order of priority) as the IT quality standards and best practices to have. On the other hand, the companies in the Western Balkans mostly have ISO9001, ISO27001, ITIL/ISO20000, SCRUM, IT Mark, Project management (listed in order of priority).

To bridge this gap, it was identified that **_to some extent there are available local/regional service providers for training, consulting, certification and financial assistance for implementation and certification of the ISO standards_**. But, for some standards and best practices such as TOGAF, almost no service providers exist and obtaining the necessary knowledge or getting the certification abroad just adds to the even initially high costs.

Based on the analysis on the both markets the standards and certifications of interest were identified and further analysis for them was conducted. This analysis covered availability of training and consulting providers for the specific standards, the time and the price range for implementation/training and certification. Taking into account the results from this in-depth analysis we concluded that the standards that should take into consideration for the regional market in the following period are: **_ISO 27001, SCRUM, ISTQB and TOGAF_**.

We identified **_ISO 27001_** as relevant standard because it is recognized on the target markets and is required by companies from target market that want to outsource part of their operations and they want to make sure that their information are appropriately protected. There are numerous service providers for ISO 27001 in the Balkan region, for training, consulting and certification. We believe that best modality would be to train significant number of people in ISO 27001 implementation, certain number in ISO 27001 audit and to provide consulting support for guidance for the implementation process in regional companies that are mature enough for implementation of ISMS and have enough resources (time and trained personnel for ISO 27001)

Since software development is one of the most exported IT service on the regional markets and **_SCRUM_** is recognized on the target markets and required by some of the companies from target market that want to outsource part of their operations and they want to make sure that the results are consistent and easy to monitor, we recommend this methodology for SW development companies in the region. We believe that best modality would be to train significant number of SW developers for SCRUM Methodology and certify certain number of senior developers, in order to enable relevant competencies for companies to implement this methodology for managing their SW development projects.

Due to the size of the IT companies in the region, and their expertise, we believe that software testing can be a good niche and a solid starting point for larger scale projects in outsourcing. The **_ISTQB_** is the recognized certification for testers in the target markets but unfortunately it is neither so available nor recognized in the region, and service providers are limited or not existent. For that reason, we believe that support from USAID to provide training and certification on a co-financing principle for key individuals will be extremely beneficial, and the impact would be significant.

We identified **_TOGAF_** as most relevant framework that should be supported by USAID for the following reasons. First reason is because it is an enterprise architecture methodology and framework, and is focused on improving business efficiency. This kind of holistic approach is not common in the region and is essential for more stable economy. Second reason is because it is not recognized in the regional market, thus there is not a demand for it, and is required in the target market. The last reason is that it is quite an expensive framework for training and certification, and the availability for service providers is low, and that is why we believe that support from USAID will be extremely beneficial, and the impact would be significant.

As recommendations in general, we propose the following for the IT associations and the companies themselves:

Recommendation 1. Through the IT associations and chambers, disseminate the results of the analysis to a wider stakeholder group in the regional markets, so that the ICT companies can be aware of the recognized IT quality standards and best practices in the target market regions.

Recommendation 2. Through the IT associations and chambers, provide information and awareness training on the IT quality standards and best practices currently not present on the regional markets such as TOGAF, ISTQB, advanced levels of ITIL etc.

Recommendation 3. Through the IT associations and chambers, identify specific financial assistance from various sources (government and/or donors) to support the companies in obtaining the necessary IT quality standards and certificates that will improve their competitiveness on the target markets. Present the information to the IT companies but as well discuss with the providers of financial assistance to include or allow support for these identified standards and certifications as part of their programs.

Recommendation 4. Through the IT associations and chambers, promote the companies that have implemented internationally recognized IT quality standards, and maintain local registers of certified companies and individuals.

Recommendation 5. Document and promote the compliance with the selected IT quality standard or best practice framework, to increase the visibility of their efforts and investment in certifications and compliance

For the USAID REG project, we recommend the following activities and initiatives:

Initiative 1. With the support of the USAID REG project, extend the existing Quality2IT portal (_http://www.quality2it.org/_) to include a regional register of certified companies and individuals for the identified IT quality standards, and then in cooperation with the IT associations in the countries promote it both locally to IT companies and externally to potential clients, and maintain it.

Initiative 2. As a critical group of companies from the region have implemented IT Mark but it is not as recognized in the target markets, with the support of the REG

project, a guiding document can be created as a tool the companies can use to evaluate compliance to CMMI at a certain maturity level and give identify necessary steps to transition to CMMI and get ready to seek certification, if required by the potential clients.

Initiative 3. Design and implement a regional co-financing/grant scheme for implementation and/or certification of a specific IT Quality standard (both organizational and individual) based on a concrete business case for export to one of the identified target markets. The focus should be on a developed business case so that the companies do their homework prior to the application for the grant and present concrete requirements for the country/sector/client that they are targeting, as well as expected return on the investment. The selected certification/standard can be any of the identified in this analysis. The impact of this initiative can be measured as total value of won projects by those supported companies over a period of 1 or 2 years.

Initiative 4. Organize a regional 4-day training event for TOGAF 9 for a group of 20 people (4-5 per country) from an accredited provider, with vouchers for the exam reimbursable after successful completion of the exam. The companies should pay a subsidized fee for the training no more than an average cost for a similar training provided by a local training center (approx $500 per person). This training will enable creation of an initial regional expertise and certified individuals for this high-cost certification, and it might have a ripple effect for the existing service providers to include such training on their program.

Initiative 5. Due to the high popularity of the SCRUM as an agile methodology for software development, and the recognition of Certified Scrum Master as individual certification in the target markets, and the availability of local or regional providers, as part of the USAID REG project support can be establishment of a voucher system for training and certification, with 25-30% reimbursable costs for training and 50% reimbursable costs for the exam itself, after the successful completion of the exam for CSM. The vouchers would be in the amount of approx $250-$300 for the training and approx $75 for the exam.

Initiative 6. Due to the importance of software testing as part of the quality assurance in software development, and the focus of the export activities of the companies in the region on software development, the Software Tester Certification – Foundation Level from ISTQB is recognized as an important differentiating factor for the companies who what to do export. The topics are suitable for online learning and there are available on-line courses to prepare for the certification. Part of the USAID REG project support can be establishment of a voucher system for training and certification, with 30-50% reimbursable costs for training and 50% reimbursable costs for the exam itself, after the successful completion of the exam for ISTQB Foundation level. The vouchers would be in the amount of approx $150-$250 for the training and approx $125 for the exam.

8. Annexes

8.1. Annex 1: List of all contacted stakeholders

Separate files – contact lists per country

8.2. Annex 2: Final survey questions

Separate files – for IT companies
Separate files – for IT associations

8.3. Annex 3: Listing of respondents – per IP address

Separate files

8.4. Annex 4: Listing of companies that left contract details

Separate files

8.5. Annex 5: Aggregated results per question per country

Separate files

8.6. Annex 6: Aggregated results per questions for the region

Separate files

8.7. Annex 7: List of publications/documents for secondary research

	Name of the document:	Authors:	Period:
1.	South East Europe IT Industry Barometer (SEE ITIB) 2014 – Regional Results	GIZ	15-16 April, 2014
2.	Baseline Report: Assessment of Competencies, Technical Skills and Needs in Bosnia Herzegovina's ICT Services Sector	USAID	March 2014
3.	Work Force Demand Survey for the ICT Industry in Macedonia	MASIT	April 2009
4.			
5.			
6.			
7.			