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WHAT COMPETENCIES SHOULD CIO HAVE IN COMPANIES IN LATVIA?

Author: Kaspars Cikmačs

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Kaspars Cikmačs

Supervisor: Gitāna Dāvidsone

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Abstract

The aim of the research was to identify the most important competencies required for fulfilling the role of Chief Information Officer (CIO) in medium and large organizations in Latvia. In the research process the available literature was analysed and a list of competencies compiled. The competencies were grouped in 4 groups: Managerial, Foundational, IT and Industry, accordingly serving as basis for a two-step online questionnaire. A questionnaire for experts was used for competency evaluation and their ranking. Opinions of 20 former and current CIOs were received and analysed. The questionnaire results were validated by a focus group of CIOs from companies, registered in Latvia.

The results of the questionnaire and the focus group were used for developing a CIO competency model consisting of 10 competencies with their importance ratings and 5 additional non-rated competencies. The research revealed that the most important competencies for CIOs in Latvia are the following: Business Understanding; Strategic thinking; Team leadership: building and developing team. The created competency model can serve as an information source for improving the skills of the current CIOs or for selecting individuals for a CIO position in Latvia.

Keywords: CIO; Chief Information Officer; IT managers; competencies; companies in Latvia.

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1. Introduction

1.1. Importance of IT and CIO in companies

It is difficult to imagine in Latvia 2012 a bank operating without an Internet-bank, an airline company without a web portal for ticket booking or a business bookkeeping without computers. Information Technology (IT) plays a very important role in the life of almost every company. The Central Statistical Bureau of Latvia provides the following data regarding the year 2011: almost all companies with more than 250 employees used computers (98.3%), the internet (98.3%) and had an internet homepage (91.7%) and 69.6% of employees in such companies used the automated data exchange (Central Statistical Bureau of Latvia, 2011).

In 2009 in Latvia only 9% of large enterprises (250 employees or more) received orders on-line, while in Norway, Sweden, Ireland this ratio was more than 40% (Eurostat, 2011). This testifies that there is still place for improvement of Information Technologies in Latvian enterprises.

In organisations a person responsible for Information Technology (IT) is usually called IT/IS manager, IT director, IT department manager or Chief Information Officer (CIO). According to Wikipedia (2011) - CIO is a job title commonly given to the most senior executive in an enterprise responsible for the information technology and computer systems that support enterprise goals.

Up to now in Latvia competency analysis has been done for managerial positions and entry level IT specialists (Dzērve&Kalniņš, 2011). There is no comprehensive multi-industry analysis of the required competencies for CIO position in Latvian companies based on research by involving actual CIOs and experts of those companies. As CIO role is important for ensuring success of most companies, this research focuses on the analysis of the most important competencies required to be a successful CIO in Latvia.

The present research is targeted at large enterprises (250 and more employees) in Latvia. In comparison with the rest of the world, in Latvia there are only 54 companies with more than 600 employees and only 3 have more than 5000 employees (Dienas Bizness, 2011). Most of literature about CIOs is based on research done in the USA, where there are 18 469 firms with more than 500 employees and 1956 firms with more than 5000 employees (U.S. Census Bureau, 2007). The difference between the number of large companies in the USA

and Latvia is striking. The research task is to compare the foreign research with my research of Latvian companies, and to analyse the possible differences.

70% of the 506 CIOs polled in different countries considered IT to be an integral business partner by the rest of the company (Nash, 2009). Author of this paper believes that CIO of a company should have knowledge about Information Technology, alongside with managerial competencies and understanding of the industry the company operates in. Should CIO have more IT knowledge, be an excellent manager or expert in the industry (Banking, Pharmacy, Insurance, Forestry, etc)? Which competencies are the most important for CIOs in Latvia? Finding answers to these questions is in the focus of this research.

1.2. Thesis outline

The question posed for research in this thesis is as follows "What are the most important competencies needed to fulfil a CIO role in a large company in Latvia by opinion of experienced CIOs?" During research literature about competency theories and competency models for IT and other top manager positions in different countries was reviewed. The literature review served as a basis for developing the questionnaire. By evaluating and comparing specific competencies, respondents to the questionnaire answered the question: "Which competencies are the most important for a CIO position in Latvia?". Answers by Latvian experts contributed to the data gathering for the analysis. Using different methods, the gathered data were analysed, followed by their validation of the expert focus group. A Latvian CIO competency model was developed on the basis of the collected data and the results of other researches done across different industries and countries were compared.

The thesis proper consists of 6 sections. Section 2 presents a review of literature on competency models and a review of previous researches. Section 3 explains the applied methodology for gathering data about Latvian CIOs competencies and the methods for validating the collected data. Section 4 covers analysis of the questionnaire and the focus group, and creation of Latvian CIO competency model. Section 5 discusses the findings by comparing the questionnaire results with the opinion of the focus group and other similar researches by other authors. Section 6 is devoted to conclusions and suggestions for further research.

2. Literature Review

2.1. Definitions of Competency and Competency Models

Literature offers different definitions of the term "Competency". Boyatzis (1982), professor of organisational behaviour, defined Competency as an underlying characteristic of an employee which results in effective and/or superior performance. Spencer & Spencer (1993, p.9) enlarged this definition by saying that "Competency is an individual's underlying characteristic that is causally related to criterion-referenced effective and/or superior performance in a job or situation". Mirabile (1997) defined competency as knowledge, skill, ability, or characteristic associated with high performance on a job, such as problem solving, analytical thinking or leadership. Moreover, Mirabile added that some competency definition include even motives, beliefs, and values. Theses definitions have a common feature as far that competency can consist of many characteristics, including skills, motives, ability, knowledge, etc. what results in better performance of an individual.

In literature there are used two different words: Competency and Competence. Although many people use the two words interchangeably, Teodorescu (2006) in her article describes differences between those two words. The key difference is that "Competency" is used to describe characteristics (knowledge, skills, mindsets, etc.) that result in successful performance, but "Competence" equals worthy performance that leads directly to the most efficient accomplishment of organizational goals.

The term "Competency cluster" describes a group of competencies, skills or behaviours, organized for the purpose of simplification, e.g. technical clusters under which various behaviours describe the cluster for job or group of jobs (Mirabile, 1997). While in several competency models there is used the term "Competency cluster", still there are sources that avoid using this term, when grouping.

Competency models refer to collection of knowledge, skills, abilities, and other characteristics (KSAOs) that are needed for effective performance in the jobs in question (Campion et al.,2011; Mirabile,1997). Competency models often attempt to distinguish top performers from average performers (Campion et al., 2011). Competency models are represented in different formats, depending on the methods used to collect the data, customers' requirements, and the particular biases of the people creating the model (Mirabile, 1997).

In her article Teodorescu (2006) also points out differences between "Competency Models" and "Competence Models". She describes "Competency Models" as "a framework listing competency statements in which critical behaviours, skills, knowledge, and attributes for each role are described, while "Competence Models" are identified as "a framework defining the process and work results required to consistently achieve or overachieve goals set to specific roles, teams, divisions, and organisations."

Mansfield in his research (1996) described two widely used approaches to competency model building – the single-job approach and multiple-job approach. According to Mansfield the multiple-job approach requires a set of non-technical building block competencies, typically including 20 to 40 competencies, each with a definition, and a set of 5 to 15 behaviours describing common ways in which employees demonstrate their competencies. All in all, the competency model for a single role would be likely to have eight to sixteen competencies (Shippman et al., 2000). In the models, competencies are often organized into a hierarchy or grouped into clusters (Mirabile, 1997).

Purpose of the competency models can be very different in HR systems of different companies. Few examples by Campion et al (2011):

- Hire new employees by using assessments and other selection procedures that measure the competencies. For example, executive succession programs are commonly guided by competency models in most organizations today (e.g., Lucia & Lepsinger, 1999);
- Train employees by creating courses aimed at the development of certain competencies;
- Evaluate the performance of employees by structuring the appraisal instrument around the competencies;
- Promote employees by using the competencies to establish promotion criteria;
- Develop employee careers by using the competency models to guide the choice of job assignments and make other career choices.

There are several generic models, including Boyatzis' General Model of Competencies and the Iceberg Model of Competencies. Boyatzis (1982) identified six clusters of competencies that were related to managerial effectiveness. These included goal and action management cluster, leadership cluster, human resource management cluster, directing subordinate cluster, focus on others cluster, and specialized knowledge. Boyatzis' (1982)

model was a result of a series of studies to examine the significance of social roles, knowledge and skills in each cluster. Boyatzis' models do not refer to any particular job role, but they do emphasize management and social interaction skills.

In the Iceberg Model of Competencies Spencer and Spencer (1993) adapted Boyatzis' set of characteristics to derive five types of competency characteristics: motives, traits, self-concept, knowledge and skills.

Motives are psychological features that arouse a person to action toward a desired goal. These internal drives lead to the need to seek achievement, power and affiliation. Traits are an individual's characteristics and consistent responses to situations or information. Self-concept is how an individual positions him/herself. It is related to his/her attitude, values and self-concept. Knowledge is the body of facts, principles, practices and theories that form the basis for a given discipline; it is the acquired information in specific work domains. Skills are the application of knowledge and know-how to perform a certain physical or mental task (Spencer and Spencer, 1993). According to the Iceberg Model, knowledge and skills tend to be visible and relatively surface characteristics of individuals, whereas traits and motives are deeper and more central to personality. Self-concept characteristics fall somewhere in between. Hidden and visible competencies play different roles in the job. Hidden competencies are the behavioural competencies that drive an individual‘s performance in a job, whereas visible competencies tend to be the technical competencies required by employers (Spencer and Spencer, 1993), see Figure 1.

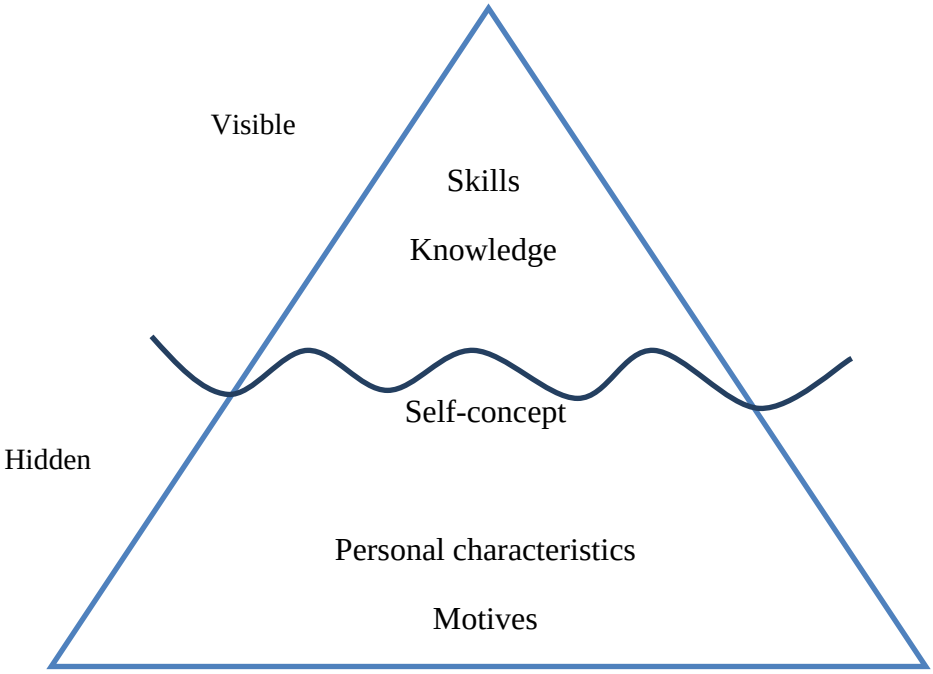

Figure 1. Iceberg model (Spencer and Spencer, 1993)

Beliefs on improvability of competencies have been researched by Maurer et al. (2003). The collected data showed a clear ordering of improvability beliefs that follow predictions made in the Iceberg Model of competencies. Organizational and Verbal were seen as being the characteristics that are most "changeable" while Entrepreneurial and Personal were the least changeable (Maurer et al., 2003).

Spencer and Spencer (1993) describe generic competency models for several groups of professions, like technicians, salespeople, human service workers, managers, and entrepreneurs. For each profession they describe competencies and the related importance of each. Influence and Achievement orientation are listed as the most important competencies for managers. Guillén&Willem (2009) in their research confirm the appropriateness of grouping competencies into three clusters which have parallels with the three social motives of affiliation, power and achievement.

Many companies and professional sectors develop their own competency models. "There is no unique Competency model that could be useful for all organizations" (Beheshtifar& Nekoie.Moghadam, 2011). Even in cases where generic competency models are used, they are often highly tailored to the organization (Campion et al., 2011). The most common HR practice relating to competency modelling is that employers identify sets of behaviours that distinguish outstanding from adequate performers (Cockerill et al., 1995).

Competency approach is applied in many Latvian organisations (Dāvidsone, 2008). There are also several competency models developed by employers in Latvia. The author of the paper has gathered experience while participating in the creation and later using several organisation specific competency models in financial industry companies in Latvia and Estonia. The author has used models specific to certain job positions, later applied also as a generic model for all managerial positions of the company and as a generic competency model for the whole organisation.

Governments finance different competency research projects as well. For example, the U.S Department of Labor sponsors CareerOneStop website, including The Competency Model Clearinghouse, that offers the Building Blocks for Competency Models Tool to guide through the creation of a competency model for several industries (CareerOneStop, 2012).

The Building Blocks for Competency Models consist of a set of "building blocks" for competency model development. These "building blocks" are arranged in nine tiers and each tier embraces a set of related competencies. The arrangement of the tiers in a pyramidal shape represents the increasing level of specificity and specialization of content (Figure 2). As a user moves up through the various tiers of the model, the competencies become specific to certain industries and/or occupations. The nine tiers are grouped into three categories:

Occupation-Related Competencies:

- Tier 9 – Management Competencies
- Tier 8 – Occupation-Specific Requirements
- Tier 7 – Occupation-Specific Technical Competencies
- Tier 6 – Occupation-Specific Knowledge Competencies

Industry-Related Competencies:

- Tier 5 – Industry-Sector Technical Competencies
- Tier 4 – Industry-Wide Technical Competencies

Foundational Competencies:

- Tier 3 – Workplace Competencies
- Tier 2 – Academic Competencies
- Tier 1 – Personal Effectiveness Competencies

Figure 2. Competency model Clearing house building block tiers (CareerOneStop, 2012)

Grouping in tiers and categories is similar to Competency clusters, but the authors of CareerOneStop used different terminology. CareerOneStop website provides also many pre-defined models for different industries and the ability to create own models.

The literature review makes it clear that there are very different ways of grouping and describing competencies. For example, in CareerOneStop (2012) model the group of Foundational Competencies includes Academic and Personal Effectiveness Competencies, while in the Iceberg model these represent different levels (Knowledge and Personal characteristics). At the same time there are many competencies that recur in several models. Competencies described in generic models can be used as a basis to start creating a competency model for any industry and even job-position.

2.2. Competency Models in IT field

Literature offers different research on IT workforce competency, e.g. on business competency of IT professionals (Bassellier & Benbasat, 2004), soft skills of entry level IT workforce (Dzērve&Kalniņš, 2011) and general IT workforce competencies (Ho & Frampton, 2010). The consulting firm Hudson developed the Hudson 5+1 Competency Model that includes five competency clusters: information management, task management, people management, interpersonal management and personal management. The sixth cluster is for technical or organization-specific knowledge and competencies (Ho & Frampton, 2010).

Ho & Frampton's (2010) analysis of IT workforce competencies is based on the Iceberg model. Exploration of the work of IT workforce for qualitative data collection was followed by content analysis to identify the most important competencies. The focus was put on two 2 areas: Training (the skills and knowledge competencies at the top of the Iceberg model) and Selection (the self-concept, traits and motives competencies at the bottom of the Iceberg model).

IT architects were used by Ho & Frampton (2010) as an example of IT workforce analysis and the research provides a summary of important competencies of IT architects (Figure 3).

Analysis of literature on IT area competency models reveals that an important part of those models concerns technical competencies, that sometimes are even grouped as a separate cluster.

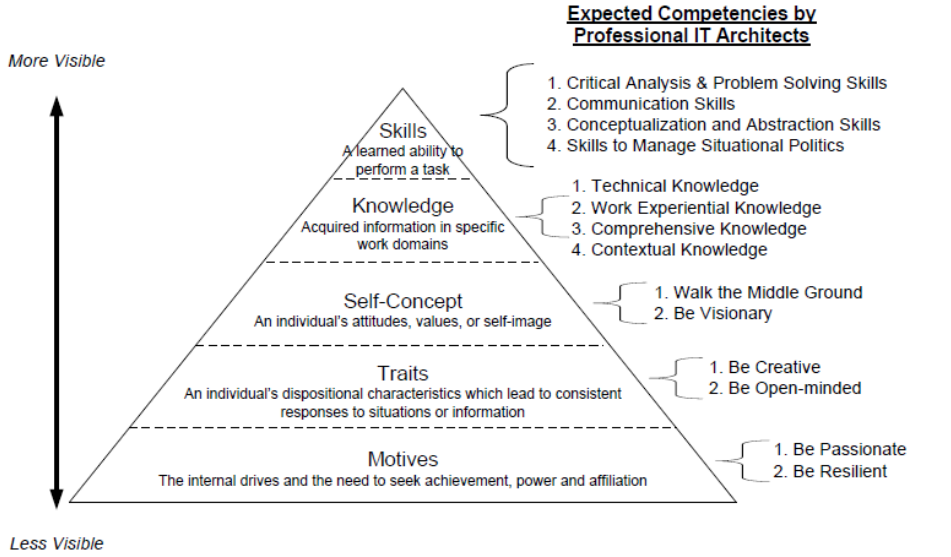

Figure 3. Resulting Competencies Mapped to Iceberg Model [Adapted from Spencer and Spencer, 1993]

Figure 3. Iceberg model (Spencer and Spencer, 1993) & expected competencies for IT Architects (Ho & Frampton, 2010).

2.3. Overview of studies about CIOs competencies

There is much research and literature about the desirable behaviour and competencies of CIO, including those by Enns et al. (2003), Broadbent&Kitzis (2004), Smith (2006), Mathews (2007), Nash (2009), Peppard (2010), Waller et als. (2010), Chen&Wu (2011), CIO Executive Council (2012).

Some researchers focus on an approach to derive competencies from the role. Depending on the organisation's needs and maturity, CIOs can have different roles, such as Informed buyer, Relationship builder, Organizational designer, Infrastructure builder, Entrepreneur, Value configurer, Business system thinker, Business visionary (Chen&Wu, 2011). Peppard (2010) in his paper describes 7 groups of CIO competences: Leadership, Visionary, Strategic Thinker, Relationship Builder, Diplomat, Delivery and Reading the Market. Like Peppard (2010) and Chen&Wu (2011) also Broadbent&Kitzis (2004) point out that CIOs should have broader vision as Business Visionary and Business Leaders beyond being IT managers and Infrastructure builders.

Mathews (2007) writes that high performance CIOs make an impact on the marketplace by creating new businesses or new products through their understanding of technology, customer needs and market trends. "Unfortunately, Market Knowledge, according to

Kelner[1]'s six years of accumulated data, is, compared to CEOs' competencies, a weak spot for CIOs" (Mathews, 2007, p.58).

Chen&Wu (2011) analysed IT management capability impact on the performance of CIO. Model validation reveals that IT competency (IT infrastructure, Business applications, Business-technology integration) and Management competency (Business domain knowledge, Interpersonal skills, Business management practice) leave an impact on IT management activity effectiveness, resulting in CIO role performance in different roles.

Ekimci&Ozkan (2009) investigate the required skills and activities advising on education for prospective senior IT managers. The analysis made within the framework of this paper, leads to the conclusion that social skills and activities are the most required skill and activity group for senior IT managers. Several studies have underscored not just the importance of social skills, but the importance of technical skills in the upcoming years as well (Rajadhyaksha, 2005).

Findings of Enns et al. (2003) challenge the popular assumption that CIOs with greater technical background are unable to successfully influence other top executives. Having researched India's largest vehicle manufacturing companies, Rajadhyaksha (2005) also confirms that technical capabilities are very important next to managerial competencies to managers of the organisation. This shows that still CIOs might have excellent technical background and could be successful top executives.

Different previous foreign researches on CIO competencies provide a wide range of information that can be used for creating competency analysis questionnaire and serve as a basis for comparison with CIO competency research in Latvia.

2.4. Overview of studies about competencies for top level managers

Being a member of top management team, CIO has many similar managerial duties with other top C-level executives (e.g.: CEO, CFO, CIO, etc.). By using Egon Zehnder International assessment of 25 000 executives on C-level competencies, Mathews (2007) compares CEOs (Chief Executive Officer) vs CIOs using 10 competency groups (functional expertise, team leadership, people and organisational development, results orientation,

[1] Stephen Kelner, global knowledge leader of Egon Zehnder's talent management and management appraisal practice group. ((Mathews, 2007)

collaboration and influence, change leadership, strategic orientation, commercial orientation, external customer focus and market knowledge). The following are some key findings by Mathews (2007):

- People and Organizational Development scores are relatively low for all types of executives assessed, particularly CFOs (Chief Financial Officer);
- Outstanding CIO scores slightly surpass good CEO scores on most competencies;
- Outstanding CEOs—the most well-rounded strategic leaders— perform significantly better than outstanding CIOs only in Market Knowledge and External Customer Focus.

"When it comes to People and Organizational Development, from the CEO on down, C-level executives are relatively poor performers." (Mathews, 2007)

Beeson (2009) analyses key factors for Executive Career Advancement and identifies 3 groups of key factors to succeed in the senior executive level:

- Nonnegotiables (demonstrating consistently strong performance, displaying ethics, integrity and character, being driven to lead and to assume higher levels of responsibility);
- Deselection Factors (weak interpersonal skills, treating others with insensitivity, putting self-interest above company good, holding a narrow perspective on the business and the organisation);
- Core Selection Factors (setting direction and thinking strategically; spotting marketplace trends and developing a winning strategy that differentiates the company; building and continually upgrading a strong executive team; having a "nose for talent"; establishing an adequate level of team cohesion; managing implementation without getting involved at too low a level of detail; defining a set of roles, processes, and measures to ensure that things get done reliably; building the capacity for innovation and change; knowing when new ways of doing business are required; having the courage, tolerance for risk, and change-management skills to bring new ideas to fruition; getting things done across internal boundaries (lateral management); demonstrating organization savvy; influencing and persuading colleagues; dealing well with conflict; growing and developing as an executive; soliciting and responding to feedback; adjusting leadership style in light of experience.

Dulewicz&Herbert (1999) made a 7 years follow up study of general managers, with the goal to identify those competencies (skills, abilities, values) and personality characteristics as assessed seven years ago, in association with the current success and rate of advancement. The research revealed that there are ten characteristics that differentiated "high-fliers" (persons who gained faster salary increase). These included: willingness to take risks, an exceptional ability to manage and motivate the staff, a need to achieve really demanding targets and a strong competitive streak.

According to Spencer and Spencer (1993) top level managers use other competencies than entry level managers. Top managers have a higher level of influence competency and they use many additional competencies as well. Excellent top managers show high levels of achievement orientation, organisational awareness and networking. Dulewicz&Herbert's (1999) research does not point out so significant difference between "high-fliers" and "low-fliers" in achievement motivation, so there is a contradiction with Spencer and Spencer's work (1993) where this is mentioned as one of key differentiators.

By analysing CEOs competencies in India, Spencer et al. (2008) established that the best Indian CEOs have competencies in four general areas: Socially Responsible Business Excellence, Energising the Team, Managing the Environment, and Inner Strength. Indian CEOs compared with western CEOs were stronger in Entrepreneurial Drive, Adaptive Thinking and Networking. This research clearly shows that excellent top managers in different regions of the world have certain differences in key competencies. We can conclude that also senior managers in Latvia might have a need for slightly different competencies than in some Western or Eastern countries.

Tahir &Bakar (2010) analysed Managerial competencies of Malaysian Financial sector using a structured questionnaire which was adapted from the work performed in 1999 by the Committee on Management and Supervisory Training to survey managerial competency and management training needs of managers and supervisors in Mainland China and Hong Kong. The questionnaire includes also competencies that are mainly specific to the Asian region, such as quality improvement and knowledge of trade practices in the Chinese Mainland market (VTC, 2008). The research also contains analysis of managers' knowledge of the English language that is becoming more critical in performing any managerial work even in China.

When analysing medical and surgical industry top management teams Kor (2003) concluded that past managerial knowledge of the opportunities, threats, competition, and technologies specific to an industry is useful in creating entrepreneurial growth. For sustained growth, entrepreneurial firms should learn to balance different levels of managerial experience in the top management team. One way to achieve this balance is to retain valuable founder resources in the team while avoiding high levels of shared team-specific experience and industry-specific managerial experience (Kor, 2003). This clearly shows that there is high necessity also for organisation and industry specific competencies in senior managerial positions, thus it is not enough to have only excellent generic competencies.

The literature on the competencies of top level senior executives provides even contradicting conclusions concerning the most important competencies. The author of this paper believes the differing conclusions to be due to the fact that research is done in different countries, industries and at different time. Still there are also many common conclusions and even research in another region might serve as a great source of information for improving one's own competencies. It is possible to group the described competencies and use the material when researching CIO's competencies in Latvia.

Summary of literature and previous researches reveals some common trends in the required competencies for CIOs, such as achievement orientation, team leadership, organisational awareness, networking, understanding of customer needs and market trends, and also good understanding of technology.

3. Description of Research Methodology

3.1. Questionnaire Development

Data collection methods for developing Competency models include observations, subject-matter expert interviews, and structured brainstorming methods in focus groups (Campion et al., 2011), job-analysis interviews, focus groups, questionnaires, job description review, competency-model formats (Mirabile, 1997). Sometimes, companies rely on panel method for identifying competencies. In this approach, a group of experts get together and identify a list of characteristics they believe to be relevant for superior performance (Rajadhyaksha, 2005). Cheney and Lyons (1980) in their study combined two methods: interviews with executives and a questionnaire.

As the above described material reveals, there are several methods available for designing competency models, still researchers use qualitative or in-depth methods for that matter most frequently. Literature (Campion et al., 2011, Schippmann et al., 2000) on developing competency models outlines the following activities:

a. Analysing Competency Information (Identifying Competencies)
    a. Considering organizational context, linking to goals and objectives;
    b. Considering future-oriented job requirements;
b. Organizing and Presenting Competency Information
    a. Defining the anatomy of a competency (language of competencies);
    b. Defining levels of proficiency on competencies;
    c. Including both fundamental (cross-job) and technical (job-specific) competencies;
    d. Using competency libraries;
    e. Achieving the proper level of granularity;

To carry out the research, the author of this paper developed a questionnaire to get the opinion of subject-matter experts on the most important competencies of CIOs in Latvia. The above mentioned stages for developing the questionnaire have been used and accordingly the main steps were as follows:

1. Collecting in one table competencies and their descriptions in research on different CIO, IT, CEO and managerial competencies done previously by different researchers. There term “competencies” is used to describe characteristics (knowledge, skills, mindsets, etc.)

that might result in successful performance, as defined by Teodorescu (2006). Sources were selected with a view to present CIO, IT and top management competencies. Most of the used research is described in "Literature Review" section of this paper. Latvia's local specific features were outlined, and additionally competencies from two major banks operating in Latvia were included. In total, the created competency library contains 347 competencies from 17 competency models.

2. The competencies were grouped to cover different dimensions of CIOs. As a result there are 4 groups describing:
    1. **Industry** specific competencies;
    2. **IT** competencies;
    3. **Managerial** competencies;
    4. General or **foundational** competencies.

    Such grouping follows the same principles as in several researches by the authors discussed above, such as Ho & Frampton (2010), Chen&Wu (2011) and CareerOneStop (2012), who group technical, business domain, managerial and/or general competencies separately. The given grouping makes it possible to analyse the ranking of competency clusters as to their importance for CIOs as viewed by our experts.

3. While analysing each group, 7 competencies from each group were selected. The analysis had to ensure that the selected items cover a full range of competencies discussed in the reviewed researches. Competency names were adjusted to be similar to the language used and granularity.
4. Behavioural description was created for each competency, based on literature (e.g. Mathews, 2007; VTC, 2008).
5. Competency lists were compared with the IT and general competency lists from CareerOneStop (2012) web site and some terms and descriptions were adjusted accordingly.

Thus, as seen from the above, the first part of the questionnaire embraces 4 competency groups, each group containing 7 competencies as selected during the analysis of the competency library. The second part of the questionnaire contains another list of competencies that is created online on the basis of the respondents' selections in the first part. The final part of the questionnaire contains questions on the respondents' experience and the industry.

Initially it was planned to use the following procedure for filling in the questionnaire: In the first stage the respondents select competencies which he/she finds the most important for performing the CIO role successfully – 7 competencies from the list of Foundational and Managerial competencies and 7 competencies from the list of IT and Industry competencies. In the second stage a list of 14 competencies is generated, containing the competencies that have been selected by the respondents in the first stage. Afterwards the respondents have to rank the final selection of the competencies based on their importance in performing the CIO role.

As the initial questionnaire validation with actual CIOs revealed the procedure to be too complicated and time-consuming, it was simplified.

Thus, in the final version of the questionnaire in the first stage the respondents are asked to evaluate competencies using the 5-point Likert scale. The second stage contains a list of competencies with the respondents' evaluation with either 4 or 5. The respondents were asked to list in ranked order 7 most important competencies needed in performing the CIO role in Latvia. The data ranking method was chosen as it represents a comparative decision and not just an opinion.

The simplified questionnaire still provides the necessary data about the importance of competencies as viewed by experts, and the author of the paper believes that it improves the participation ratio and the quality of the gathered data.

See the Questionnaire in full in Appendix A.

3.2. Target population

The research is based on the opinions of subject-matter experts. Current CIOs, or individuals, previously fulfilling CIOs role in Latvia - operating companies were selected for the role of experts. The participants list embraces only persons who fulfil CIO or similar role in companies with at least 100 computerized workplaces, thus eliminating IT outsourcing and smaller companies.

To involve the target group participants, they were contacted in the Latvian CIO forum in Linkedin (http://www.linkedin.com/groups?gid=1916104). This group is appropriate as a research target group as its members are IT managers who work or have worked for a large (100+ PCs, WAN) Latvian company or subsidiary that does not sell its solutions, services or hardware. The members' responsibility includes defining IT strategy and security policy,

resolving operational issues and managing IT budget. At least five industries are represented in this group: public sector, banking, insurance, energy, and retail sales.

An invitation to participate in the questionnaire was sent to CIO level managers in other major companies in Latvia, too.

3.3. Data collection procedures

The questionnaire was organised by using web-survey software based on OpenSource LimeSurvey (http://cikmacs.lv/CIO/). Configuration and programming of advanced functionality was done personally by the author of this research. The questionnaire was piloted by two potential respondents and three independent experts to improve its quality before surveying. The pilot study appeared to be very useful as afterwards significant changes in the design of the questionnaire and many other improvements were introduced in the initial version with a view to simplifying for the respondents the thinking and answering process, while even increasing the depth of possible analysis.

Several weeks before starting the survey (at the end of January) a presentation was made to the potential participants about the purpose of the research with a following discussion about the preferred technical arrangements. The participants agreed that a web survey would be the most appropriate form, and they were interested in participating.

During the survey period (2 weeks) each participant received an individual invitation in e-mail to fill in the questionnaire. Moreover, the questionnaire was accompanied with an indication to a link for self-registration possibility in the Latvian CIO forum in Linkedin, thus involving also managers whose e-mail addresses were not known to the author of the research. Those participants, who did not answer within the week, received a reminder.

3.4. Data gathering and analysis tools

The questionnaire results were analysed after exporting the data from the LimeSurvey software to Microsoft Excel 2010. By using statistical methods (e.g. frequency, averages, pivot-tables and weighted frequency) the most important competencies were calculated. The methods described by Wang (2008) in his research about ranking responses in multiple-choice questions were applied.

To be able to make conclusions, “frequency in top7”, “total weighted score” and “average score in Likert-scale questions” were calculated for each competency.

"Frequency" is calculated as the count of the competency as mentioned in top7 list. For example, if 10 respondents selected "Results Orientation" in ranking question, then "frequency" for the competency is 10.

"Total weighted score" takes into account also the position in which the particular competency is ranked. "Total weighted score" is calculated as a sum of all ranks for the particular competency, where rank 7 is used as the highest score, 6 for the second most important competency rank, etc. For example, if the respondent ranked "Market knowledge" in the second position, then it gets 6 points. If two respondents ranked the competency in the second position, then "Total weighted score" for the competency is 12 (6 multiplied by 2).

"Average Likert-scale question score" is used to analyse average evaluations of particular competency in the first section of the questionnaire, where respondents evaluate the competencies using the 5 point Likert-scale. This parameter is calculated as mathematical average of all answers about a particular competency.

There were also done several other calculations and analysis that partly are presented in Appendix C, and served as source for searching correlations and conclusions.

The analysis included also ranking by competency group (Industry, IT, Managerial, Foundational) to see which group is the most important. Analysis of possible correlations with items of the 4th section of the questionnaire (respondents' experience, industry) was done to find out whether there are significant differences based on those parameters.

3.5. Methods of validation

The results of the questionnaire (draft version of competency model) were validated by using the expert focus group and individual interviews with HR experts, managers of CIOs (CEOs, COOs) and other top management members of large companies in Latvia. The expert focus group consisted of nine persons who have several years' experience as CIOs. Some of them have been CIOs for more than 5 years and now are performing other top management roles. The focus group was chaired and the interviews conducted by a person experienced in different IT managerial roles and top management positions in companies operating in Latvia. The purpose of the focus group was to discuss the results of the questionnaire and validate whether the prepared list could be used as a basis for the final version of the Latvian CIO competency model. Involvement of focus group ensures high quality interpretation of the results. To ensure productive discussions, the presentation and the list of questions were

prepared for the focus group meeting in advance. The focus group had no access to the results of the questionnaire prior the meeting. The discussion and the key findings were recorded.

4. Data Analysis

4.1. Survey results

Invitation to participate in the questionnaire was published in the Latvian CIO forum in Linkedin and personal invitations were sent to e-mail and Linkedin accounts. Out of 36 personal invitations 22 responses (61%) were received, two of them being incomplete. For the first two sections the Likert scale evaluation was applied and 21 respondents provided feedback. 20 (55%) valid responses were given to the ranking question. The average time for filling in the survey was 11 minutes and 18 seconds.

4.2. Respondents profile

The respondents have experience in fulfilling the CIO role in various industries in Latvia. The majority (11) have experience in banking; insurance, the public sector, telecommunications were represented by two respondents from each sector. One respondent came from each of the following industries:
forestry, shipping, transportation, logistics/delivery, power utilities and airline.

Analysis of the answers to the question "Please list the maximum number of computerized workplaces you were responsible for in a company within the same period of time" reveals that 60% of the respondents are or were responsible for more than 1000 computerized workplaces. (Table 1)

Nr of PCs	Nr of Respondents	%
>2000	6	30%
1000-2000	6	30%
500-1000	5	25%
<500	3	15%

Table 1. Results of the questionnaire – Respondents' by experience in being responsible for the number of computerized workplaces

12 respondents fell into the 30-39 age group, 8 respondents into the 40-49, none from other age groups.

At the time of filling in the survey 55% of the respondents were fulfilling the role of CIO. 55% of the respondents indicated that their range of responsibility included computers not only in Latvia, but also in other counties. 90% of the respondents have work experience in a managerial position for more than 5 years (55%

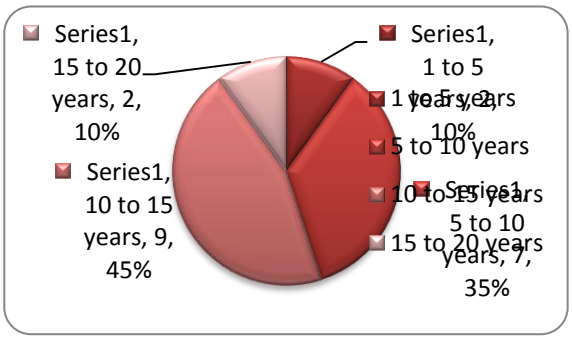

Figure 4. Results of the questionnaire - Expierience in managerial positions.

for more than 10 years) (Figure 4).

Half of the respondents have experience in CIO position for more than 5 years. (Figure 5)

Statistics about the respondents profile shows that the respondent group represents experienced CIOs of medium and large companies in Latvia with average number of more than 1300 computerized workplaces.

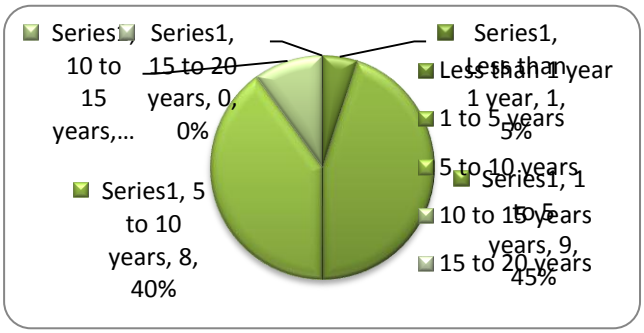

Figure 5. Results of the questionnaire - Expierience in CIO position

4.3. Selection of competencies

Analysis of the ranking question, asking the respondents to rank 7 most important competencies (top7) from the list, reveals the domineering position of Business understanding with Strategic thinking ranking second. These two competencies are also leading as to the total score from all the respondents; they are selected as the most important also by the sub-groups of the respondents - by 6 and 5 respondents respectively. See the full list of the results in Appendix C.

Analysis of the competency groups reveals that competencies from the list of Managerial competencies are more often indicated as the most important ones. Least of all there are selected competencies from the IT competencies list. Average evaluation of competencies from the Industry and Foundational competencies lists is almost equal.

None of the respondents included in the top7 list the following 4 competencies: Packaged applications skills, Business applications skills, Negotiation skills, Cross cultural awareness.

Table 2. Results of the questionnaire – the most important competencies.

Rank by Avg Likert score	Rank by weighted rank score	Competencies	Total weighted score	Frequency in top7	Average Likert quest.	Group
4	1	Business understanding	89	18	4,48	Industry
1	2	Strategic thinking	71	13	4,57	Managerial
9	3	Knowledge of IT trends and new technology	41	11	4,33	IT
6	4	Team leadership and development	40	8	4,38	Managerial
4	5	Problem solving and decision making	37	9	4,48	Managerial
1	6	Results Orientation	34	10	4,57	Foundational
12	7	People and Organizational Development	33	7	4,19	Managerial
3	8	Managing Change	31	8	4,52	Managerial
11	9	Planning and Organising Skills	25	8	4,29	Managerial
6	9	Business language	25	6	4,38	Industry

6	9	Team building and team work	25	5	4,38	Managerial
9	12	Impact and Influence	24	7	4,33	Foundational

The first two columns of Table 2, show that for some competencies there are significant differences between the results of the ranking question and the first section of the questionnaire where the respondents were evaluating competencies using the 5-point Liker scale (column "Rank by Avg Likert score"), e.g. applying the Likert scale evaluation the top 3 competencies would be Strategic thinking, Results Orientation and Managing Change, that by the ranking question results are in positions 2, 6 and 8 respectively.

There are some other significant differences if comparing the results of the ranking question and the Likert-scale question. The average score in the Likert-scale questions reveals that average 4 would be "Knowledge of Industry trends", "Using the networking appropriately for sourcing" and "Negotiation Skills", but those competencies were not selected as the most important ones in ranking questions (they ranked respectively only in the 21st-23rd, 24th and 25th place from 28 competencies). At the same time "IT infrastructure skills" was evaluated only with the average score 3.29, while the ranking question evaluation is in the 18th place.

Analysis of the survey data by using subgroups of the respondents reveals that there are some differences in the competencies selected by the respondents from the Banking industry (Bankers) and the others, as well as with the respondents who had/have responsibility about IT also outside Latvia (Multi-country CIOs). The results show that Bankers ranked lower the competency "Knowledge of IT trends and new technology", but higher than the others – the competencies "Team building and team work" and "Managing Change". The multi-country CIOs ranked higher "People and Organisational Development" and lower than the others "Knowledge of IT trends and new technology". See the Tables on the result with the Bankers in Appendix C.

Competency "Impact and Influence" was significantly higher ranked by CIOs who's experience in the position is more than 5 years.

It is also interesting to note that the competency "Knowledge of IT trends and new technology" got a high total score, though the average ranking by the respondents was only 3.3, and only one respondent had selected it as the most important competency.

"Team leadership and development" and "Team building and team work" competencies both were selected by the respondents with average rank 2, although each separately ranked

only in positions 4 and 9-11. Both competencies are team management related. If those two competencies were merged in one, then "Total weighted score" for them would be 65 and they would be listed clearly as the 3rd most important competency.

4.4. Results of focus group

To validate the draft version of the competency model a focus group was set up, consisting of nine current and former CIOs from Latvia. Most of the focus group participants answered the questionnaire as well.

The results of the survey were presented to the focus group and during the presentation a discussion on findings was initiated, by asking several questions prepared in advance. At the end of the presentation the questionnaire results and the proposed CIO competency model were discussed.

The following questions were asked to the focus group:

1. What surprised you most of all concerning the results of the questionnaire?
2. Which competencies are missing in the model?
3. Do you agree that this model can be applied to any organisation?

All in all the focus group members admitted the results to be explainable and there had been no big surprises for them. However, several facts were pointed out as surprising and those initiated the discussion, namely:

- **The two top ranked CIO competencies Business understanding and Strategic thinking – are outspokenly dominating**. The participants of the focus group confirmed that those are the most important competencies nowadays in performing the role of CIO. The significant gap between those two competencies and the rest of the list was recognised as surprising, but still understandable.
- **The list of top12 competencies contains only one competency from the "IT competency" list.** The participants agreed in their opinion that in larger organisations first and foremost CIO is a senior level manager who should manage people with IT skills, so the ability to manage is more important than performing IT tasks by themselves.
- **The questionnaire reveals that in the group of Managerial competencies Delegation is ranked the lowest.** The participants recognized this fact as surprising, but in the discussion reached the conclusion that Delegation is a matter-of-course in

the life of every manager. They also agreed that the fact of this competency ranking lower than the others should not be explained by being non-important.

- **None of the respondents included Negotiation skills in the list of top7 competencies**, while average in the Likert scale questions is 4 out of 5. The participants confirmed that in their opinion Negotiation skills is a very important competency for CIOs, but if to rank other competencies are more critical in their opinion as well.
- **None of the respondents included Cross cultural awareness in the top7 list** and also in the Likert scale questions the average grade is only 3.14 out of 5. The participants pointed out that there are some requirements for cross cultural skills for CIOs in companies, operating in Latvia. Those skills are needed in cooperation with Lithuanians, Estonians or, for example, people from India. The participants do not see any problems in dealing with people of different cultures and nationalities living in Latvia. But, as the majority of contacts of the focus group are with people in Latvia, this competency was not ranked higher.
- **CIOs from the banking industry (Bankers) ranked Team building and team work competency significantly higher than others.** The participants explained that banks in Latvia usually have bigger teams of knowledge workers and they often work in cross-border teams. Such environment requires more attention to establishing and working in teams. The participants also mentioned that if in the questionnaire the competencies "Team leaderships and development" and "Team building and team work" were merged, then the merged competency clearly would be ranked top1 by Bankers. They also pointed out that those competencies can be merged as they had not been differentiated by several respondents while answering the questionnaire.
- **Bankers ranked Knowledge of IT trends and new technology lower than others.** The participants gave two reasons for the above fact: 1) Banks generally are more conservative in taking big risks and thus are slower in implementing the latest technologies; 2) three years ago (before the crisis) probably it was much more important, but now when for several years the top priorities for banks are efficiency and cost reduction, these competencies are not of top importance anymore.

When discussing the issue on the "competencies missing in this questionnaire", the participants indicated to one that might be added to the list, namely, they agreed that one of the very important competencies for CIOs in Latvia is **financial management skills**. Those

skills include CIO ability to use the differences of capital and operational expenditure, understand impacts on companies by Profit&Loss calculations and Balance sheet, and the ability to calculate financial return of investments and projects.

Likewise it was mentioned that the competency "**Using external sourcing**" might also be included in the research. This competency would imply CIO ability to use outsourcing and purchase ready solutions instead of developing them by the company team. This requires the ability to manage external teams. Consequently, the author of the questionnaire included the competency "Using the networking appropriately for sourcing". The participants agreed this formulation to be quite complicated and to have too high focus on networking rather than on sourcing, and that is the reason for its misunderstanding during the answering survey. They see networking as less important in fulfilling the role of CIO than using external sources for solving current needs.

While discussing the reasons of low ranking of the majority of IT competencies, the participants concluded that IT competencies are important, but each of them is important only on a conceptual level, and not on an in-depth technical level. The participants suggested another possible new competency "**Understanding of IT architecture and general principles of IT applications and infrastructure**". This competency would be higher level conceptualization of "Application development skills", "IT infrastructure skills", "Packaged applications skills" and "Business applications skills". The merged general competency might have high ranking in the survey.

The discussion about the feasibility of applying the competency model to any organisation, led to the conclusion that in principle it might be applied in any organisation the participants have had working experience. Still it was considered that if the survey embraced representation from the public sector, including the ministries and hospitals, then the differences might be greater. The participants were reminded for that matter that two respondents from the public sector had participated in the questionnaire and their results did not differ significantly from those of the others. One of the survey respondents, who had been fulfilling the CIO role in Latvia for many years, but currently for several years has been working in the same industry in Western Europe, also sent an e-mail commentary stating that in his opinion there would be differences in companies with different maturity and culture.

The focus group made the two following assumptions that need to be tested in next researches, namely:

1. If generally the competency is on a good level and is not challenging, then during the questionnaire respondents do not pay attention to it and rank it lower.
2. Are the top ranked competencies (Business understanding and Strategic thinking) the most challenging for CIOs, as they are often ranking high?

The focus group suggested comparing the questionnaire results with the published job advertisements for CIO positions with a view of getting other validation of the model. On 25 March 2012 (after the Focus group meeting) the author of the paper reviewed vacancies in three most popular job listing web portals in Latvia: CV-Online (www.cv.lv), WorkingDay (http://www.workingday.lv) and the State Employment Agency of Latvia vacancy portal (http://cvvp.nva.gov.lv). On that date there could be traced only two job vacancies that would qualify for a role of CIO or IT manager. One of the job advertisements was for the position of IT director at the State Revenue Service of Latvia, the other was for an unnamed company with a small IT team (CV-Online, 2012). In addition to the requirements set by law and academic education qualifications the first advertisement also required the ability to work with and analyse a huge amount of information and make appropriate decisions, knowledge of English and the Russian language, good cooperation skills, computer skills and excellent reputation. Requirements in the second advertisement: top level skills of data analysis, evaluation and problem solving, excellent communication skills, the ability to convince and manage good knowledge about IT infrastructure and IT strategies, knowledge of English, creative thinking and the ability to learn quickly new concepts. Two advertisements provide too little material to come to any significant conclusion, nevertheless it can be seen that some of the competencies are the same as in the questionnaire results.

4.5. Development of Competency model for CIOs

Usually a description of competencies includes several parts: a descriptive label or title; a definition, commonly describing how the competency appears on the job in detailed behavioural terms, the levels of proficiency may describe progressive levels of competency development on the job (e.g., novice, master, and expert), levels of competency performance (e.g., marginal, good, and excellent), job grade level (e.g., associate engineer, staff engineer, or senior engineer), or other levels depending on the purpose (Campion et al, 2011). In the CIO competency model developed in this paper, there is described for each competency only the title and definition, as performance is specific to a particular situation and the job grade

level is defined already in the title of the model. The importance of the competency is included in the Competency model as well, similarly as by Spencer& Spencer (1993).

The Competency model for persons fulfilling the CIO role in companies in Latvia was developed by using the results of the questionnaire and adjusted taking into account the focus group commentaries. Ten most important competencies and five additional competencies were selected for the list. First of all the competencies that by the ranking question got at least 24 weighted points were included (the next competency have a significantly lower score - only 15). Then the team and people development competencies ("Team leadership and development", "People and Organizational development", "Team building and Organising Skills") were merged into the competency titled "Team leadership: building and developing team". The importance of each competency was assigned according to the weighted score in answers to the ranking question. This list was given the name "Key competency list". The list of additional competencies contains competencies that have the average score at least 4 in the Likert-scale questions of the questionnaire, but are not listed in the key competencies list.

Table 3. The results of the developed competency model: Key competency list.

Competency	**Importance**
Business understanding	XXXXXXX
Strategic thinking	XXXXXX
Team leadership: building and developing team	XXXXXX
Knowledge of IT trends and new technology	XXXX
Problem solving and decision making	XXX
Results Orientation	XXX
Managing Change	XXX
Planning and Organising skills	XX
Business language	XX
Impact and Influence	XX

The following competencies are also included in the competency model as "Additional competencies", but of less importance:

- Market knowledge
- Delegation

- Knowledge of Industry trends
- Negotiation skills
- Financial knowledge

The competency model in full with descriptions is given in Appendix D.

5. Discussion of Results

Several major objectives were set for the research. Firstly, the goal was to collect data about the most important competencies for CIOs in companies in Latvia. This was achieved by constructing and executing the questionnaire with competency lists, based on extensive studies of literature about managerial, IT and top management competency research. Secondly, the aim was to create a competency model that would serve as educational material for CIOs and guidance material for persons selecting individuals for CIO positions. The research resulted in developing a competency model with 10+5 competencies for persons fulfilling a CIO role in organisations in Latvia. Thirdly, to compare with the results of other researches, for identifying possible differences between managerial positions, IT positions and other CIO competencies.

5.1. Differences in questionnaire results and focus group options

The results of the questionnaire are a valuable source of information about CIO competencies. In principle the focus group confirmed the results of the questionnaire, adding some commentaries.

The results of the questionnaire reveal certain differences between the answers in the Likert-scale questions and the ranking question. The focus group discussion confirmed that answers to the ranking question helps to get a clearer idea about the respondents' perception on the item importance. Ranking of competencies can be very valuable information, e.g. for understanding which competencies a person should develop at first, or which competencies are more important for selecting a person for a CIO position. At the same time answers to the Likert-scale question reveal the individual importance of a competency. It also helps to identify mandatory lower importance competencies, that probably would not be used as key competencies in the selection of a candidate for a CIO position, but still would be useful for a CIO to maintain his/her position and develop further.

The author of the paper believes it to be the right decision to use the two-step questionnaire for this research. This helped to reveal better and more qualitatively the experts' opinion, than it would have been by using only the Likert-scale questions or only ranking of competencies. Feedback from pre-testing of the questionnaire served as valuable input for the construction of the questionnaire.

The focus group wondered that the competency of financial management knowledge was not included in the questionnaire. It is also surprising that this competency is missing in 17 reviewed competency models with 347 listed competencies that were used as a source for the construction of the questionnaire. Review of literature reveals that this competency might be sometimes indirectly included in such competencies as "prioritize technology investments" or "purchase software to ensure that applications are meeting the needs of the organization" (Chen&Wu, 2011). Little attention given to this competency in the previous researches compared with this one might be explained by the fact that financial evaluations and cost-savings are so high on CIOs' agenda only during the last few years after the financial and the economic crisis.

5.2. Latvian CIO Competency model

The present research made the author conclude that CIOs in their development should pay more attention to business understanding, strategic thinking and team management competencies. The created competency model in full is given in Appendix D.

5.3. Comparison of findings with other researches

Literature review reveals that the most important competencies for CIOs are organisational awareness, team leadership, achievement orientation, networking, understanding of customer needs and market trends and also good understanding of technology. At the same time there are significant differences between different researches. A detailed table, comparing the key competencies in papers of different authors is presented in Appendix E.

Spencer&Spencer (1993) list Influence and Achievement orientation as the most important competencies for managers. In the competency model developed in this research both of these competencies are listed, but only ranked as number 6 and 10.

In the majority of reviewed competency models for IT professionals such competencies as Strategic thinking or Business understanding are not included. The author of this research believes that this fact can be root-cause for the gap between IT professionals and IT managers and the rest of business employees in an organisation. The lack of requirements for such competencies makes it also more difficult for IT professionals to develop to a CIO level job position because in order to be suitable for the role of CIO a person has to show potential and/or skills of strategic thinking and good business understanding which are skills not required in their previous roles. Research revealed that very experienced CIOs evaluate

competency "Impact and Influence" significantly higher than others, and in the same time they ranked competency of "Problem solving and decision making" significantly lower.

Comparison with other CIO researches reveals a lot of similarities with the results of the present research. For example in Peppard (2010) as top competencies for a CIO position there are mentioned "Strategic Thinker", "Leadership" and "Reading the market" which are similar to the top competencies in this research. Mathews (2007) writes that high performing CIOs make an impact through their understanding of technology, customer needs and market trends. The author of the paper believes that "customer needs" is a competency similar to "business understanding" and those two match the results of this research. In the present research "Market knowledge" is not included in the top competencies as it was ranked slightly lower. Its lower ranking might be explained with fact that in the present research answers were given by CIOs and Kelner's data on six years show that Market Knowledge is a weak spot for CIOs (Mathews, 2007). If the primary data source for the research had been peers of CIO or CEO, then probably Market Knowledge would be ranked higher.

This research revealed that technical IT knowledge for fulfilling the CIO role is of a significantly less importance than other competencies. It differs considerably from Rajadhyaksha work (2005) where technical competency for top managers is regarded of the same importance and at the same level as managerial competencies. The difference might be due to the fact that there more attention was paid to middle level managers, while in the reviewed Latvian organisations CIO is usually a member of senior management with several dozens of IT experts as subordinates, therefore managerial skills in overall are more important than technical competencies.

"Packaged applications skills" (e.g. MsOffice) is the lowest ranked competency by ranking and the Likert-scale questions. It is also the only competency with the average evaluation below 3 (2.81) in the Likert-scale. The second lowest ranked competency is Business application skills. Still in many organisations it is believed that top IT manager should have excellent MsOffice and business application skills, though this research does not confirm it.

This research clearly shows that managerial competencies are the most important for fulfilling the role of CIO in large organisations in Latvia. Similar conclusions have been drawn by several other researchers about CIO competencies, e.g. Waller et al. (2010) concludes "that the highest performing CIOs are effective because they embrace the idea that

everything they need to accomplish will be achieved through people, by people, and with people".

All in all we can see that CIO competencies are more similar to other top manager competencies than to the competencies of IT specialists. It suggests that there might also be a career path from a non-IT senior managerial role to a CIO position. A proof of it might be the author's experience of working together with two successful CIOs whose background and previous career steps were not IT-related. Enns et al. (2003) assert in their conclusions "that only highly interpersonally skilled individuals—regardless of technical background—advance to the CIO position."

Maurer et al (2003) researched beliefs on improvability of competencies, similarly as in Spencer&Spencer (1993) Iceberg model. Comparison of the results of improvability research and competencies in this model shows that the majority of listed competencies are improvable. Top four competencies are "visible" according to the Iceberg model, although they might be relying on other "hidden" competencies indirectly. This shows that the developed competency model can also be used as a guidance for selecting the knowledge and skills for improvement to become better CIOs.

The analysis raised the issue about the importance of financial management competency as it was not mentioned directly in other researches and was not included in the questionnaire either, but it came to the fore only during the focus group discussions. Including evaluation of financial knowledge in the questionnaire would be useful in other similar researches.

One of the limitations of the research is its being based on the opinions of CIOs themselves. Probably some results would be different if the correlation of actual performance of CIOs with their competencies had been analysed. Such research would require much more time for collecting data about CIOs actual performance. The competency model might also be validated by wide range research of CEOs opinions.

Another limitation is the participation of mainly current and former CIOs who are actively cooperating with other CIOs, e.g. CIOs who are active members of the Latvian CIO forum and who agreed to participate in the survey. This means that the respondent group was partly self-selective, although this impact is not significant as there were participants from many industries, and the respondent group includes majority of well-known experienced CIOs of Latvia.

The competency model can be used as a material for developing skills and knowledge. The readers should remember that there is included only the most important competencies, and there could also be other important competencies while fulfilling the role of a particular CIO in a particular organisation. The results of the questionnaire revealed the way the banking industry differs from the others, and the differences for managers who are also accountable for the IT operations outside Latvia. This proves that some competencies might be more important in one industry than in another. At the same time - maturity, culture and goals of a particular organisation might also require different competencies. To use the competency model for the selection of a CIO, the competencies which are appropriate for the goals of a particular organisation should be selected.

One of the goals of the research was to identify whether CIOs in organisations in Latvia are different from CIOs reviewed in other researches abroad. The author of the paper believes that Latvia as a territory or the state has a low impact on the identified and described differences as the key findings are similar to the ones in the researches made in Asia and the United States.

6. Conclusions and Suggestions for Further Research

First and foremost CIO as a senior level manager requires strategic, business and managerial competencies. A CIO should have good overall understanding of IT, but the key is the ability to lead and manage IT specialists in strategically right direction for the organisation. Those competencies differ from the competencies required for IT specialists, thus making such career path quite challenging.

This research has practical applicability for recruitment and development of CIOs. Business understanding and strategic management skills should be incorporated into development programs for potential CIO's.

This research was done by analysing opinions of experts who are or were fulfilling the role of CIO. It might be useful to analyse the required competencies also by analysing the opinions of non-CIOs for example CEO's or by analysing the competency correlation with actual performance of CIOs.

Usage of "ranking question" approach in the competency modelling is a very useful approach. Financial management skills as one of the competencies for comparison should be included in a questionnaire for future analysis. This would help to validate and understand ranking of the financial management knowledge among other competencies required for a CIO.

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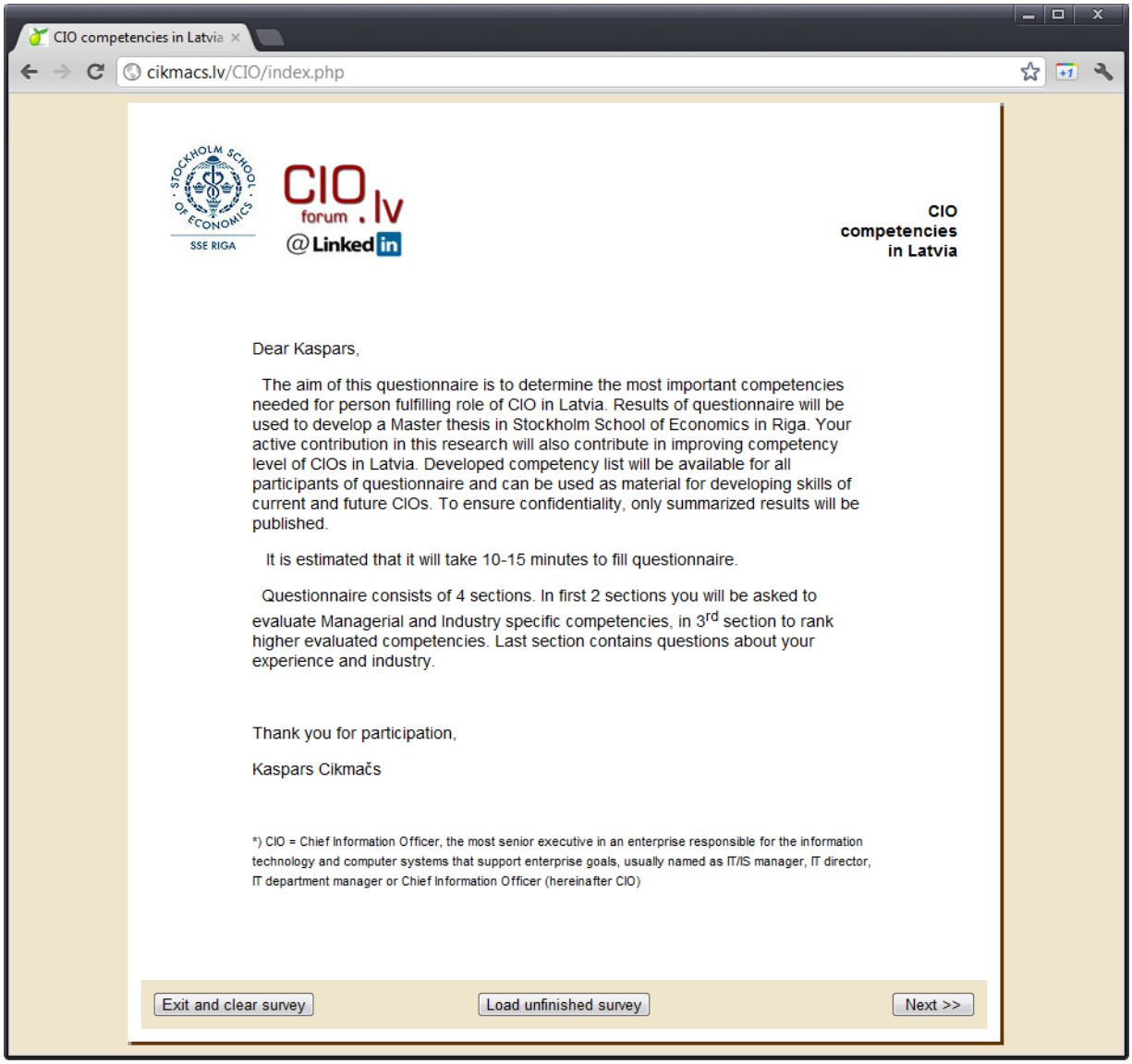
8. Appendices

8.1. Appendix A. Questionnaire

Welcome page of questionnaire:



1. **Foundational and Managerial competencies.** Please evaluate following competencies on how important are they in order to perform the role of CIO successfully in Latvia. (1 = Not important at all, 5 = Extremely important)

Managerial competencies:

Competency	Description, behavioural indicators
Team building and team work	Involves others and builds teams in which others feel valued and work towards achieving shared goals.
People and Organizational Development	Develop the capabilities of others and the organization as a whole, finds satisfaction in influencing or even transforming the lives and careers of others.
Managing Change	Transforms and aligns an organisation to drive for improvement.
Delegation	Delegates both routine and important tasks and decisions clearly, and trusts people to perform.
Problem solving and decision making	Applies critical-thinking skills to solve problems by generating, evaluating, and implementing solutions. The ability to make the decisions needed to achieve the objectives quickly and proactively.
Team leadership and development	The ability to motivate and guide others to get them to contribute effectively and adequately to the attainment of the objectives.
Planning and Organising Skills	Sets priorities and schedules activities in a way that can improve work efficiency of his/her own and the whole working.

Foundational competencies:

Competency	Description, behavioural indicator
Strategic thinking	The ability to think long-term, leveraging business awareness, critical analysis and integration of information to develop an action-oriented plan.
Results Orientation	A focus on achievement and/or improvement of business results.
Impact and Influence	Working effectively with others, ability to leave desired effect to others.
Negotiation Skills	Negotiates skilfully in tough situations with both internal and external groups, settles differences with minimum noise and wins concession without damaging relationships.
Knowledge of English language	Have good level of reading, speaking and writing in English language.
Cross cultural awareness	Is aware of the cultural differences among people and works well with people of different backgrounds.
Business ethics and integrity	Understands and complies with the principles and rules about what is morally right and wrong in his/her business and profession.

2. **IT and Industry competencies.** Please evaluate following IT and Industry related competencies on how important they are in order to perform the role of CIO successfully. (1 = Not important at all, 5 = Extremely important). Industry = business field or sector in which a company operates

Industry (business field or sector in which a company operates) competencies

Competency	Description, behavioural indicator
Knowledge of Industry trends	Has up to date knowledge of key trends locally, regionally and globally in business field a company is operating.
Knowledge of Industry specific regulations, laws and restrictions	Is knowledgeable on the laws, regulations and restrictions in industry where company operates.
Market knowledge	Understanding the market in which a business operates, including competition, suppliers, customer base or clients.
Experience in Industry non IT role	The persona has worked before in the same Industry, but not in an IT role.
Business understanding	Understanding of business strategy, principles and processes of the company.
Companies risks management	Able to evaluate and understand companies business risks.
Business language	Is able to explain complicated IT topics using common language for people who are not experienced in IT. Knows industry specific language and terms, and communicate with other industry experts in "their language".

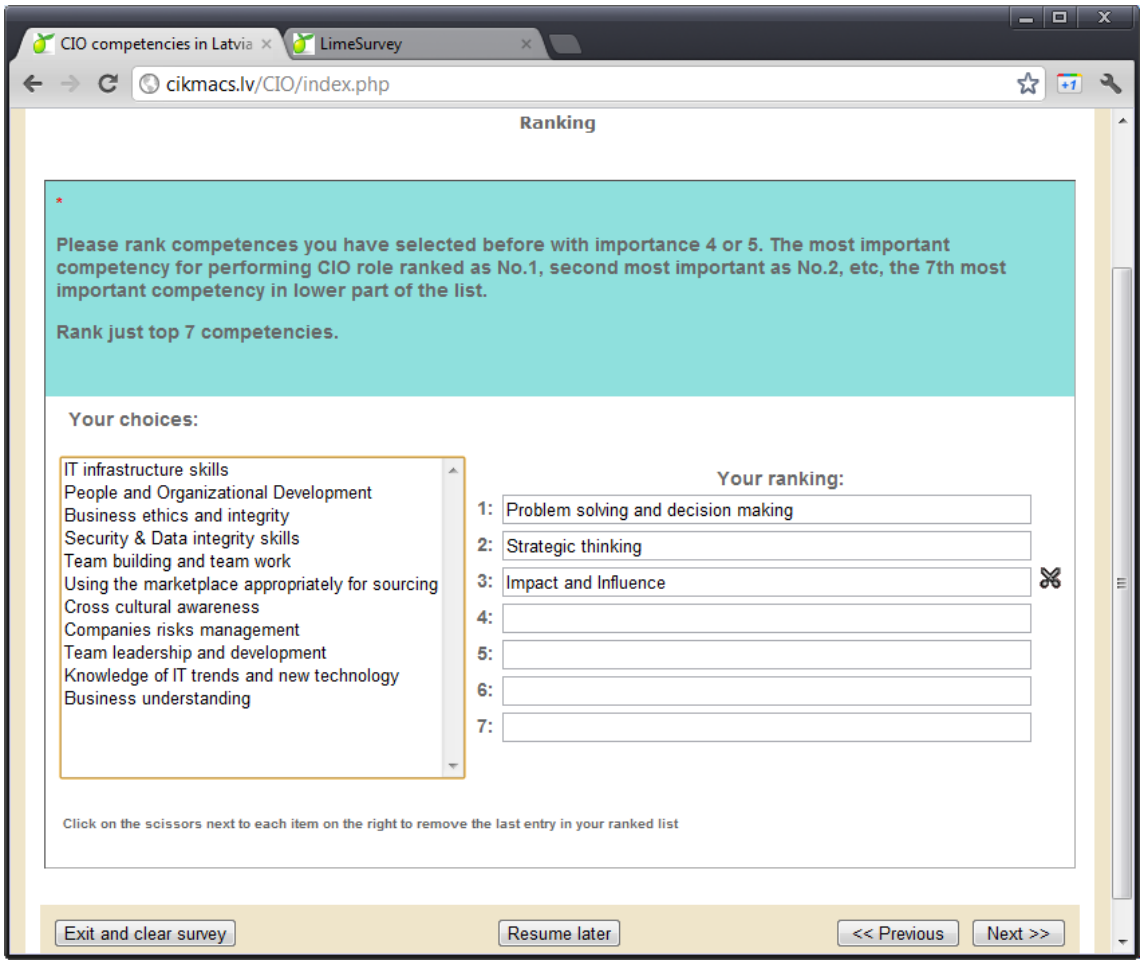
IT competencies

Competency	Description, behavioural indicator
Application development skills	Have skills to create or modify computer systems, including programming and database design. Knows at least one programming language and have practical experience in programming.
IT infrastructure skills	Knows IT infrastructure technical details, including data network components, servers, etc. Skills that are required to keep IT systems and infrastructure working effectively and securely.
Packaged applications skills	Excellently knows application software packages, such as Microsoft Office suite.
Business applications skills	Have skills to use business software applications that are used in company by end-users (e.g. SAP, Organisation specific business process application, Sales application, Bank's teller application, etc).
Security & Data integrity skills	Knows the standards, issues, and applications used to protect information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction.

Knowledge of IT trends and new technology	Regularly educates himself and keep updated about IT industry trends in Latvia and globally.
Using the networking appropriately for sourcing	Networking externally with peers and possible suppliers. Evaluates and uses external resources to achieve set objectives.

3. **Ranking.** Please rank competencies you have selected before with importance 4 or 5. The most important competency for performing CIO role ranked as No.1, second most important as No.2, etc, the 7th most important competency in lower part of the list.
   Rank just top 7 competencies.

(There is list of competencies containing titles of those competencies what respondent evaluated with 4 or 5. On right side ranking table with numbers 1 to 7. See example in the picture below.)



4. Please provide the following information about you.

How many years in your work experience you were fulfilling role of manager (any level, any speciality or industry):

(Less than 1 year, 1 to 5 years, 5 to 10 years, 10 to 15 years, 15 to 20 years, more than 20 years)

How many years in total you were fulfilling CIO (or similar IT top management) roles?

(None, less than 1 year, , 1 to 5 years, 5 to 10 years, 10 to 15 years, , 15 to 20 years, more than 20 years)

Do you also currently fulfil a CIO role in a company? (yes/no)

Do you have/had responsibility about computerized workplaces also outside Latvia (yes/no)

Please list maximum number of computerized workplaces you were responsible for in one company in the same time: ___

In which industry operates the company you were/are CIO: _____

Age group: <29, 30-39, 40-49, 50-59, 60-, No answer

Please enter your e-mail address, if you would like to receive summarized results of the questionnaire and the research: _____

If you have any additional information or comments: _____

8.2. Appendix C. Detailed results of the survey

Description of columns used in Tables in Appendix C:

Score – Weight for each answer in ranking question. Score is 7 if respondent ranked the competency as the most important, score is 6 for 2nd most important, …, 1 for 7th ranked competency.

Total weighted score – sum of all scores for the competency.

Frequency in top7 – count of how many times respondents selected the competency in top7 as the most important one, in any position.

Average ranking (reversed) – average score for the competency from all respondents.

Columns 1 to 7 – How many times the competency was ranked in mentioned position. For example: 2 in column "6", means that there was 2 respondents who ranked this competency in 6th place.

Average Likert quest. – Mathematical average of all answers about particular competency in 1st part of questionnaire, where respondents evaluated competencies in 5-point Likert scale.

Median Likert quest. – Similar as previous, just median function.

Rank by Avg Likert score – Rank in "Average Likert quest." column.

Table C-1. Results of survey by competency groups.

Competency Group	Sum of weighted score	Count in top7	Average Likert q.
Managerial	200	50	4,36
Industry	151	37	3,90
Foundational	144	35	3,92
IT	65	18	3,43

Table C-2. Ranking question results, including results by Banking industry experts, more than 5 year experienced CIOs and and CIOs who had/have responsibility outside Latvia.

Competencies	Rank in total	Rank Outside LV resp.	Rank Bankers	Rank >5y CIO
Business understanding	1	1	1	1
Strategic thinking	2	2	2	2
Knowledge of IT trends and new technology	3	10	9	4
Team leadership and development	4	4	3	3
Problem solving and decision making	5	7	6	11
Results Orientation	6	5	7	9
People and Organizational Development	7	3	8	5
Managing Change	8	6	4	8
Team building and team work	9	7	4	12
Business language	9	9	13	7
Planning and Organising Skills	9	10	10	10
Impact and Influence	12	12	10	6

Table C-3. Analysed results of questionnaire – Ranking results and Likert scale questions results. (see description in previous page)

Competencies	Total weighted score	Frequency in top7	Average ranking (reversed)	1	2	3	4	5	6	7	Average Likert quest.	Median Likert quest.	Rank by Avg Likert score	Rank by weighted rank score	Group
Business understanding	89	18	4,9	6	2	2	3	3	2		4,48	5	4	1	Industry
Strategic thinking	71	13	5,5	5	2	2	2	2			4,57	5	1	2	Managerial
Knowledge of IT trends and new technology	41	11	3,7	1	2	1	1	2	3	1	4,33	4	9	3	IT
Team leadership and development	40	8	5,0	2	1	2	2		1		4,38	4	6	4	Managerial
Problem solving and decision making	37	9	4,1	1	2		2	3		1	4,48	5	4	5	Managerial
Results Orientation	34	10	3,4	1		2	2	2		3	4,57	5	1	6	Foundational
People and Organizational Development	33	7	4,7	3		1		1	2		4,19	4	12	7	Managerial
Managing Change	31	8	3,9		3		2	1		2	4,52	5	3	8	Managerial
Planning and Organising Skills	25	8	3,1			3	1		2	2	4,29	4	11	9	Managerial
Business language	25	6	4,2		2	1	1	1		1	4,38	4	6	9	Industry
Team building and team work	25	5	5,0		4					1	4,38	4	6	9	Managerial
Impact and Influence	24	7	3,4	1		2			3	1	4,33	4	9	12	Foundational
Market knowledge	15	4	3,8		2				1	1	4,05	4	13	13	Industry
Delegation	9	5	1,8				1		1	3	4,05	4	13	14	Managerial
Knowledge of Industry specific regulations, ...	9	5	1,8					1	2	2	3,71	4	19	14	Industry
Knowledge of English language	9	3	3,0			1		1		1	3,67	4	21	14	Foundational
Security & Data integrity skills	9	3	3,0				1	1	1		3,62	4	22	14	IT
IT infrastructure skills	8	2	4,0			1		1			3,29	3	23	18	IT
Business ethics and integrity	6	2	3,0			1				1	3,76	4	18	19	Foundational
Experience in non IT role but in the same industry	5	1	5,0			1					2,95	3	26	20	Industry
Companies risks management	4	2	2,0						2		3,71	4	19	21	Industry
Application development skills	4	1	4,0				1				2,90	3	27	21	IT
Knowledge of Industry trends	4	1	4,0				1				4,00	4	15	21	Industry
Using the networking appropriately for sourcing	3	1	3,0					1			3,95	4	17	24	IT
Business applications skills	0	0	0,0								3,10	3	25	25	IT
Cross cultural awareness	0	0	0,0								3,14	3	24	25	Foundational
Negotiation Skills	0	0	0,0								4,00	4	15	25	Foundational
Packaged applications skills	0	0	0,0								2,81	3	28	25	IT

8.3. Appendix D. Competency model for CIO role in company in Latvia

	Competency	Importance	Description
Key competencies	Business understanding	XXXXXXX	Understanding of business strategy, principles and processes of the company.
	Strategic thinking	XXXXXX	The ability to think long-term, leveraging business awareness, critical analysis and integration of information to develop an action-oriented plan.
	Team leadership: building and developing team	XXXXXX	Develop the capabilities of others and the organization as a whole, finds satisfaction in influencing or even transforming the lives and careers of others. Involves others and builds teams in which others feel valued and work towards achieving shared goals.
	Knowledge of IT trends and new technology	XXXX	Regularly educates himself and keep updated about IT industry trends in Latvia and globally.
	Problem solving and decision making	XXX	Applies critical-thinking skills to solve problems by generating, evaluating, and implementing solutions. The ability to make the decisions needed to achieve the objectives quickly and proactively.
	Results Orientation	XXX	A focus on achievement and/or improvement of business results.
	Managing Change	XXX	Transforms and aligns an organisation to drive for improvement.
	Planning and Organising skills	XX	Sets priorities and schedules activities in a way that can improve work efficiency of his/her own and the whole working.
	Business language	XX	Is able to explain complicated IT topics using common language for people who are not experienced in IT. Knows industry specific language and terms, and communicate with other

			industry experts in “their language”.
	Impact and Influence	XX	Working effectively with others, ability to leave desired effect to others.
Additional competencies	Market knowledge		Understanding the market in which a business operates, including competition, suppliers, customer base or clients.
	Delegation		Delegates both routine and important tasks and decisions clearly, and trusts people to perform.
	Knowledge of Industry trends		Has up to date knowledge of key trends locally, regionally and globally in business field a company is operating.
	Negotiation skills		Negotiates skilfully in tough situations with both internal and external groups, settles differences with minimum noise and wins concession without damaging relationships.
	Financial knowledge		Those skills include CIO ability to use the differences of capital and operational expenditure, understand their impact on companies Profit&Loss calculations and Balance sheet, and ability to calculate financial return of investments and projects.

8.4. Appendix E. Overview of the key competencies for managers and CIOs.

This paper	Spencer&Spencer (1993)	Mathews (2007)	Peppard (2010)	Waller et als. (2010)	Chen&Wu (2011)	Ekimci & Ozkan (2009)
Competencies for CIOs in Latvia	Generic Competency model for managers	Future-state CIO model	CIO CM (non-ranked)	7 CIO skills	Competencies impacting IT management effectiveness	Ranked top required activities and skills for senior IT managers
Business understanding	Influence	Market Knowledge	Leadership	Committing to being a leader first	IT infrastructure	Crisis management
Strategic thinking	Achievement orientation	External Customer Focus	Visionary	Leading differently than they think	Business domain knowledge	Long-term planning
Team leadership: building and developing team	Team work and cooperation	Commercial Orientation	Strategic Thinker	Embracing their softer side	Interpersonal skills	Strategy setting
Knowledge of IT trends and new technology	Analytical thinking	Strategic Orientation	Relationship Builder	Forging the right relationships to drive the right results	Business-technology integration	Communication and Coordination skill
Problem solving and decision making	Initiative	Change Leadership	Diplomat	Practicing communication mastery	Business management practice	Leadership skill
Results Orientation	Developing others	Collaboration and Influence	Deliverer	Inspiring others	Business applications	Team working skill
Managing Change	Self-confidence	Results Orientation	Reading the Market	Building people, not systems		
Planning and Organising skills	Persistance	People and Organizational Development				
Business language	Search of information	Team Leadership				
Impact and Influence	Team management	Function Expertise				
Market knowledge	Conceptual thinking					
Delegation	Understanding of the organisation					
Knowledge of Industry trends	Relationship building					
Negotiation skills	Professional skills and knowledge					
Financial knowledge						