

Levels of IT audit implementation in Bosnia and Herzegovina

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Building information society in Bosnia and Herzegovina is progressing slowly, without significant support and insufficient institutional encouragement to spread the IT culture and standards. Relatively small amount of organizations are ready or mature enough to implement frameworks or standards of IT governance and information technology auditing. Existing legislations regarding information system auditing are insufficient to set profession at the desirable place. Research focuses on the willingness and awareness of companies for information technology auditing services, internal controls, risk studies and coordination of IT strategy with organization's business strategy.

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INTRODUCTION

Comparing to 1950s when computing area has just started, now, half a century later we are witnesses of unprecedented changes in the way business is conducted. Evolution from “pen and pencil” was quickly adapted to computers, wired and now wireless world. To perform valuable auditing work, profession quickly embraced computer technology with new techniques such as flowcharting to assess and document application processes and controls.

From the establishment of ISACA in 1960s, IT auditing had to keep up with development of new technologies, new risk and threats. Various related activities and disciplines such as risk management, security and value based assessments were introduced. Even the roles of IT auditors changed and now require understanding of business and business risks to auditing. Knowledge requirements are expanding and skills required to perform in new environment along with them.

Majority of companies nowadays allow their employees use of their own technology for business purposes. Often those employees are unaware of the risks they can bring to companies. Tablets, netbooks, laptops, smart phones and other technologies find their way into the office environment. Those are just few examples of risk that can occur in developed businesses. One of the aims of information technology auditing is reducing these types of risk.

Area of information technology auditing in Bosnia and Herzegovina has not been covered extensively so far. Undeveloped programs, legislations or even educational efforts are not present. With the introduction of international standards for auditing, control and risk management and determination about levels of implementation, conclusions will be given.

METHODOLOGY

Objectives of the “Levels of IT audit implementation in Bosnia and Herzegovina” thesis are to determine and confirm needs for the introduction of legal legislations and awakening of consciousness about the necessity of audit and control of information systems in corporate governance companies in Bosnia and Herzegovina. The aim of the research is focused on levels of IT auditing standards and frameworks with special emphasis on audit and control.

In February 2012 “Levels of IT audit implementation in Bosnia and Herzegovina” questionnaire was created and structured. Importance of research such as this one was to determine the IT audit standards implementation in private and public companies. The survey was conducted by examining group of IT managers, auditors, experts who are directly involved into implementation of standards, corporate governance, IT and information system auditing. Study/survey was conducted in public enterprises, public institutions, corporations, government institutions (budget users) as well as financial institutions creating a significant pattern.

Survey form was created using Google Spreadsheets with easy-to-use filling form. This allowed questionnaire to be faster and not time-consuming as hard copy or email fulfilling would be. Links to the questionnaire were sent to IT experts, managers and higher management of different IT sectors via e-mail or personal LinkedIn group messages. “**IT revizija**” LinkedIn group was created in 2010 with a clear goal of gathering groups of interested members in popularization of IT auditing profession. By 2012 group has 59 members from Bosnia and neighboring countries.

Research included obtaining contact information for focus group above mentioned and based on various contacts and helpful insights of other experts aimed group of **37 people** was created. Survey was opened in period of one month (February 2012). Completely filled surveys were submitted by **25 people**. 25 persons who filled survey make **67% of experts** in this area.

To achieve more professional research methodology, the questionnaire was embedded to first educational portal in information technology auditing – www.itrevizija.ba where research results will be available for free download. Although most of the managers know, use and speak English language, survey was created in Bosnian language because it is directly focused on this country. Results are presented and interpreted in English.

ITrevizija.ba
EDUKATIVNI PORTAL

Home Početna | Inf. tehnologije Uvod u IT reviziju | IT revizija Stanje IT revizije | Okviri IT revizije Međunarodni standardi | Članci Novosti | Materijali Preuzmite | Zakoni FBIH I RS | Uplatnik Istraživanje

Kategorija 1: Profil

P1.1 Molim Vas da naznačite koja je Vaša pozicija unutar organizacije i stručna sprema.

P1.2 Koliko uposlenika broji Vaša organizacija?

Manje od 100
 101-500
 501-1000
 Više od 1000
 Ne znam

Embedded questionnaire on itrevizija.ba

Research methods

During development of thesis extensive reading on the published papers was done from following areas: strategic importance of corporate governance, it auditing, business and IT value, using internal controls to protect information assets, functions of management information systems audit, risk and procedures, and implementation of international standards.

After defining the objectives and main issues, research was conducted through review of existing literature, analysis of past experiences, and exploration of domestic and international theory and practice.

Data sources that are used in this thesis are based on previous experiences and opinions obtained from employees working with large and medium-sized companies in Bosnia and Herzegovina. Data from the literature, such as professional and scientific articles from international and domestic area is also explored and used.

Primary data collection is carried out through tests and observations as mentioned. Test method used for obtaining the data is method of structured observing and structured technique of direct communication with help of questionnaire survey for individual or group – focus groups. After gathering, the data will be analyzed, tabulated and formulated.

Results will be analyzed and interpreted by deduction and synthesis.

RESEARCH RESULTS

Research concept was based on 6 parts which include 28 questions:

- *Profile*
- *Company IT profile*
- *Significance and benefits of information technology*
- *IT problems and potential solutions*
- *Awareness and usage of IT Governance frameworks*
- *Awareness and usage of CobiT*

Profile part determines “demography” of audience with 3 questions related to that group.

Company IT profile determines general overview of company and importance of IT to successful business delivery as well as management’s involvement. This part includes 4 questions.

Significance and benefits of information technology as stated in description presents and determines the values of IT investments, importance of IT in company, potential business opportunities enabled by IT, and mutual support of business and IT. This part includes 8 questions which are exceptionally important in determining organizations position towards IT.

IT problems and potential solutions is a grid structured question where the audience was able to present problems which occurred in their organization in the previous 12 months, and whether those problems were solved/remained unchanged. This part includes 3 significant questions which give out useful information about current general IT problems.

Awareness and usage of IT governance frameworks determines the implementation of internationally developed and recognized structured guides. Importance of this part will show which of the standards are mostly implemented and on which areas of IT related business. This part includes 4 questions.

Awareness and usage of CobiT shows to which extend individuals are familiar with currently most used framework for IT auditing and whether they implement it in certain areas of their business. This part is constructed of 6 multiple choice questions, which show interesting results.

Following explanation of research results will include chosen questions which support and prove the hypothesis given in the thesis.

Part 1 – Profile (demography)

Question P1.1: Please indicate position within the organization?

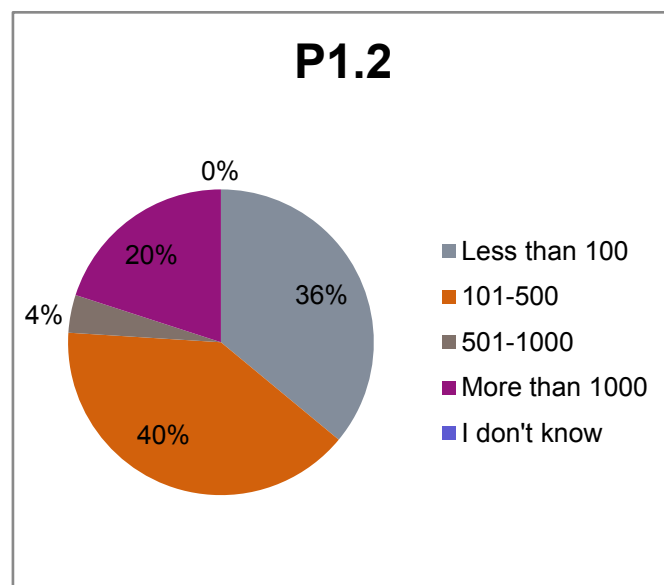
As it has previously been stated, survey is aimed towards higher IT management, experts and related IT areas. Shortened list below shows positions within the companies to prove the demography chosen.

- Internal Auditors,
- Internal IT auditors,
- Auditor,
- IT Supervisor,
- Assistant IT auditor,
- CIO,
- IT Project manager,
- IT security officer,
- Head of IT department,
- Deputy CEO,
- Project Manager,
- CSO,
- IT Department Director,
- Assistant Professor

Question P1.2 : How many employees does your organization have?

According to the size of the organization/company, obtained structure is presented below:

- **40%** of respondents are from organizations which counts between **101-500** employees,
- **36%** of respondents are from organizations that counts **less than 100** employees,
- **20%** of respondents are from organization which counts **over 1000** employees,
- **4%** of respondents are from organizations which count between 501-1000 employees.



Question P1.3 : Please indicate which group does your company belong to.

According to the type of the organization/company, obtained structure is presented below:

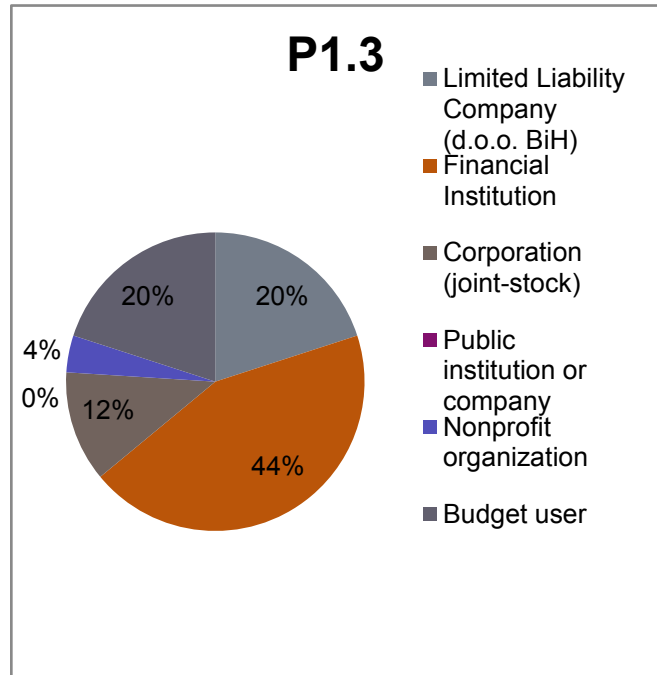
44% of respondents are from **financial institutions**,

20% of respondents are from **budget users** (Institutions of Bosnia and Herzegovina),

20% of respondents are from limited liability companies (usually private companies – d.o.o. in Bosnia and Herzegovina),

12% of respondents are from **large corporations (joint-stock)**,

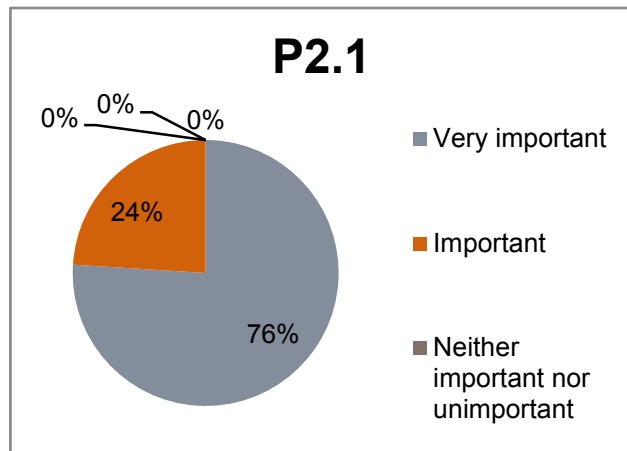
4% of respondents are from **non-profit organizations**.



Part 2 – Company IT profile

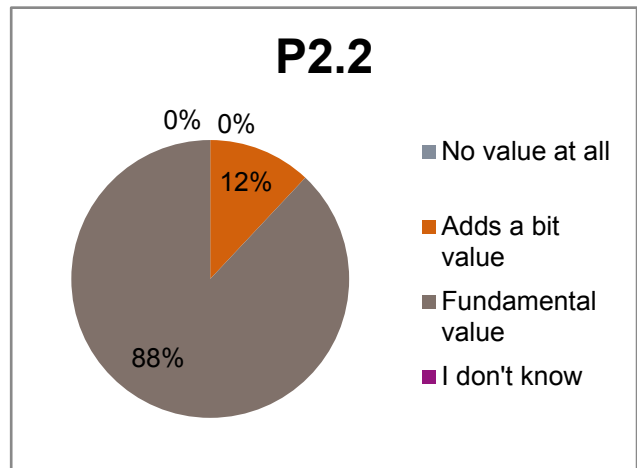
Question P2.1 : Thinking about your overall corporate strategy or vision, how important do you consider IT to be to the successful delivery of this strategy or vision?

It is clearly seen from the results obtained below that 76% of respondents consider IT to be very important and 24% important in their companies. This result shows us that importance of IT in modern business development is getting proper attention from employees.



Question P2.2 : What do you think, how much value does your organization receive using IT in order to e.g. reduce costs, improve customer relations, risk management?

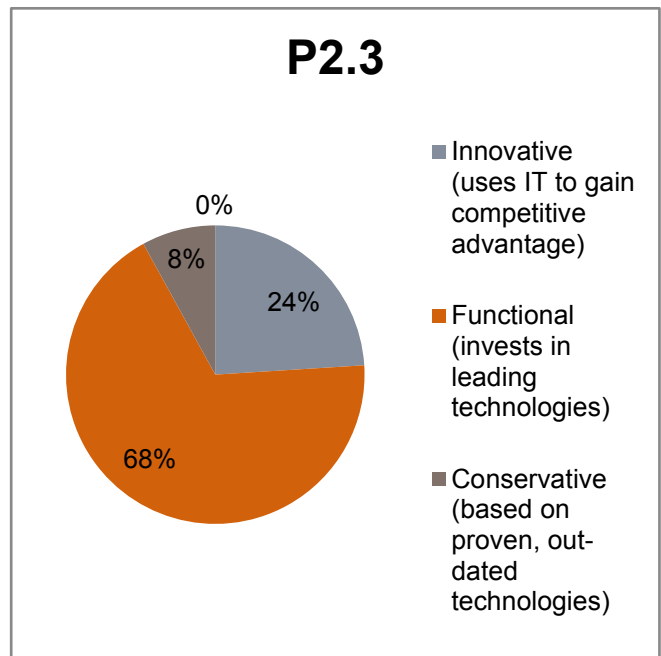
Majority of respondents, **88%** of them, consider that organization receives **fundamental value using IT in their business**. Fundamental value is characterized as essential to successful business.



Question P2.3: How would you describe the philosophy of IT within your organization?

Out of three given answers to choose, **68%** of respondents consider that the philosophy within their organization is **functional** which means that they invest in leading technologies.

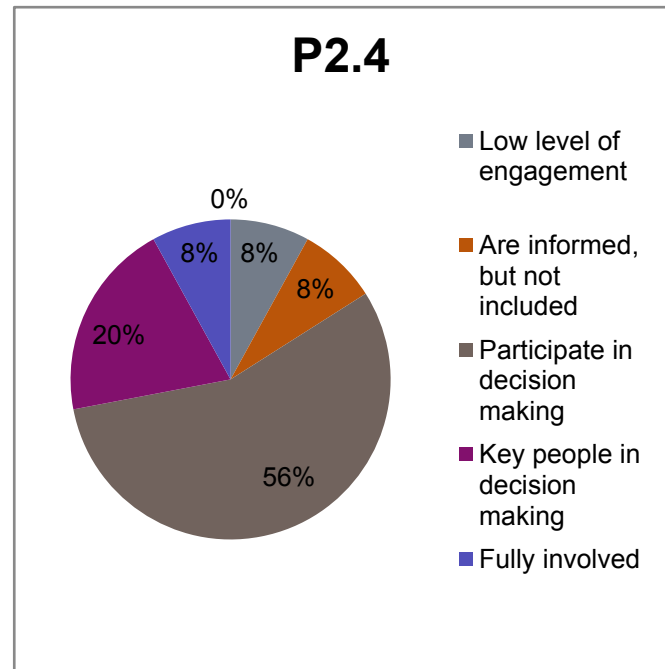
24% consider it to be **innovative**, uses IT to gain competitive advantage. This shows us how organizations perceive IT as an important addition to their business strategies and ideas.



Question P2.4: How would you describe Management's level of involvement in IT governance?

Interesting fact is that 56% of respondents consider that higher management participates in decision making when it comes to IT governance, and 20% of them consider that management represents "key people in decision making".

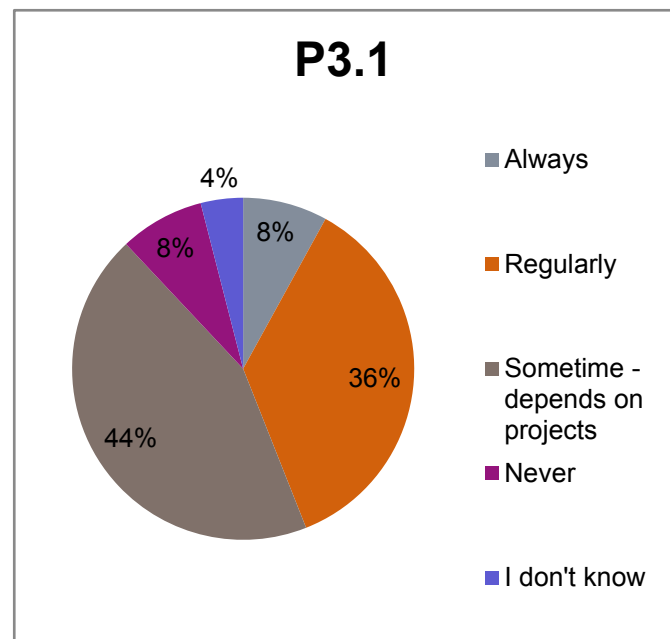
Only 8% of respondents consider that management has low level of engagement.



Part 3 – Significance and benefits of information technology

Question P3.1: How frequently is IT included on your organization's board agenda?

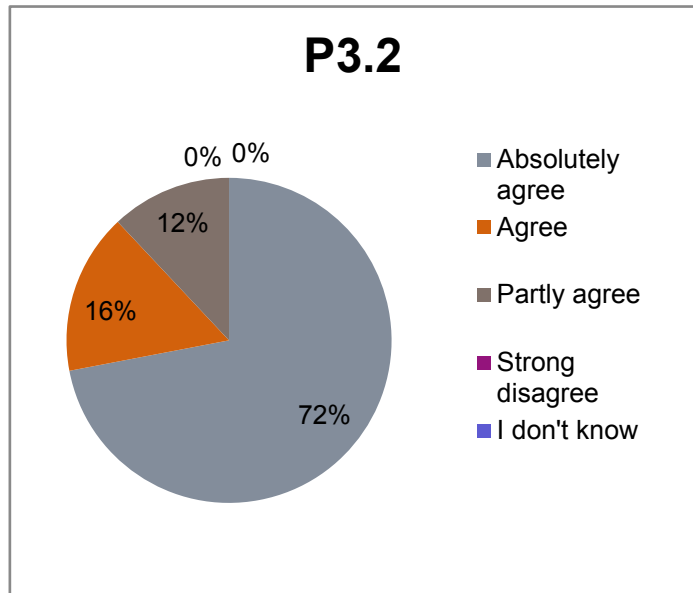
According to the answers obtained we can conclude that IT department attends organization's board meetings **sometimes – depending on the project (44%), or regularly (36%)**.



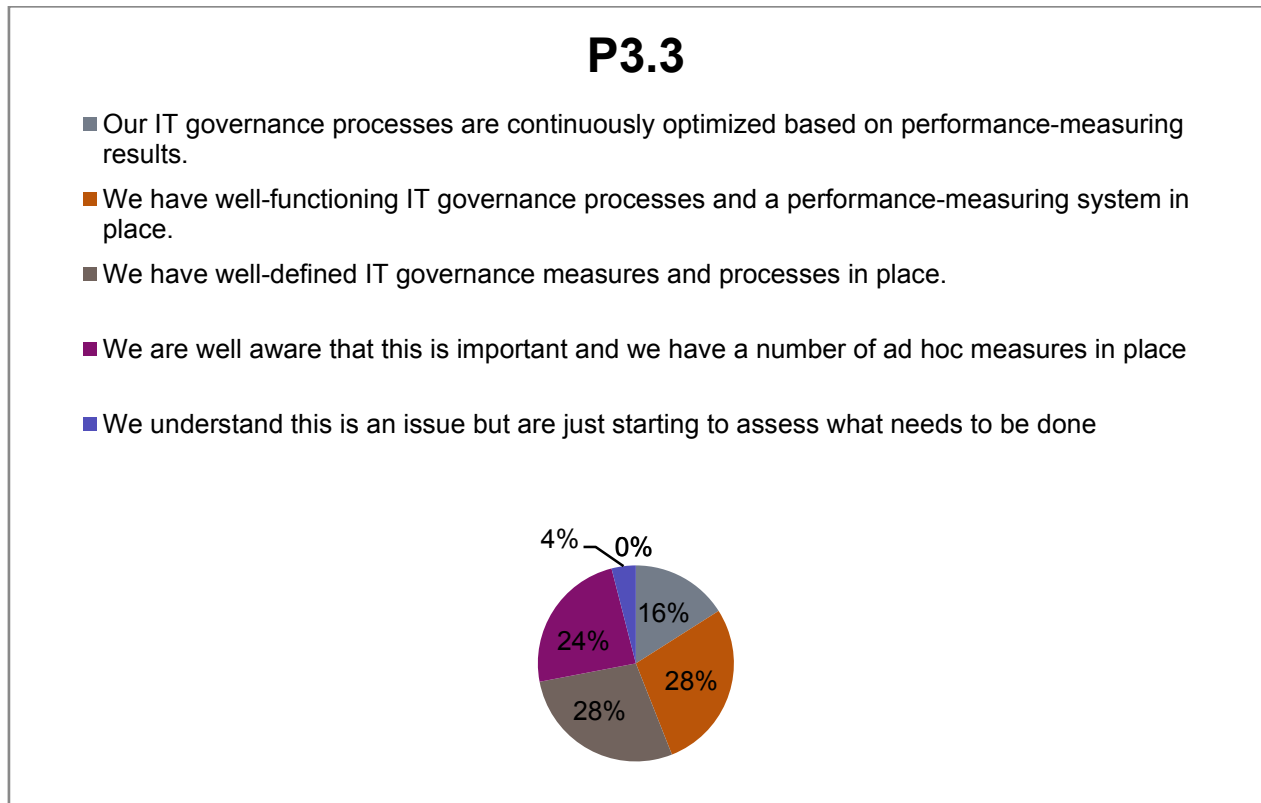
Question P3.2: How strongly would you agree or disagree that IT investments have created value for your organization?

In this interesting question goal was to prove how IT gives out additional, competitive value, and that respondents agree to this fact.

Based on the results, it's clear that majority of **72% absolutely agree, 16% agree, and 12% partially agree**. None of the respondents considers that IT investments don't create value for their company.



Question P3.3: How would you rate your organization's maturity level on IT governance?



As it is was further researched, respondents were required to give their opinion on IT governance maturity levels in their companies, where **28% percent believe that “well-defined IT governance measures and processes are in place”**.

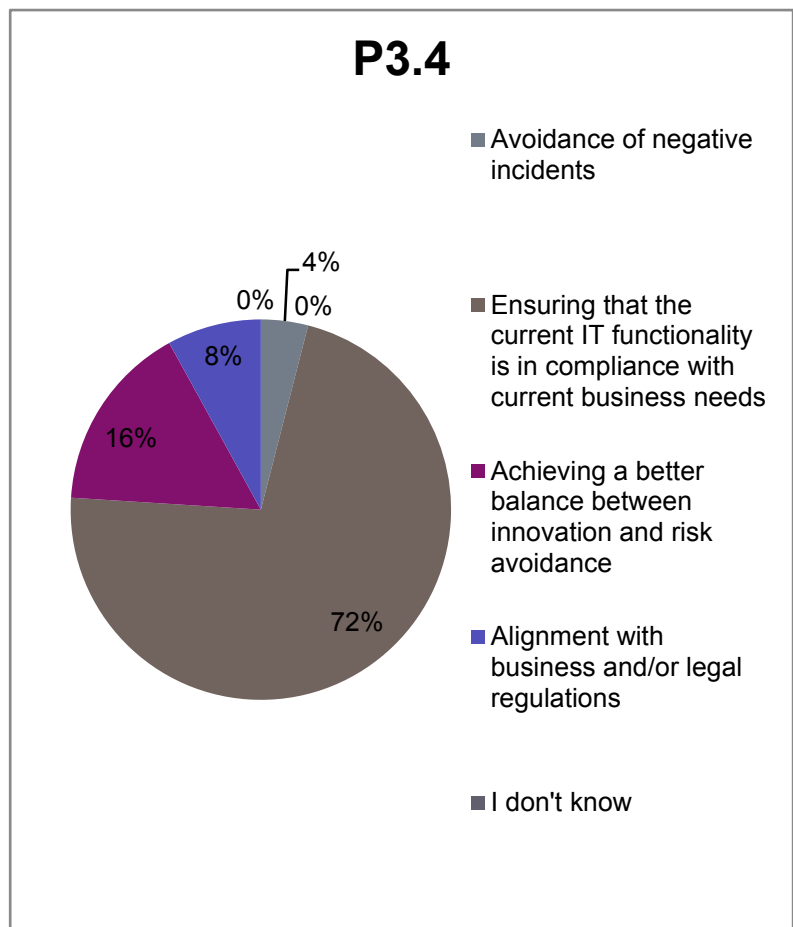
Same amount of 28% believe that their company has a “well-functioning IT governance processes and performance-measuring system in place”.

Significant amount of respondents (24%) is “well aware that the governance is important and they have a number of ad hoc measures in place”.

Question P3.4: Of these, which is the most important item in the management of IT activities of your organization?

Result given in the question above, **72%** of respondents define their IT management importance based on **ensuring that the IT functionality is in compliance with the current business needs**.

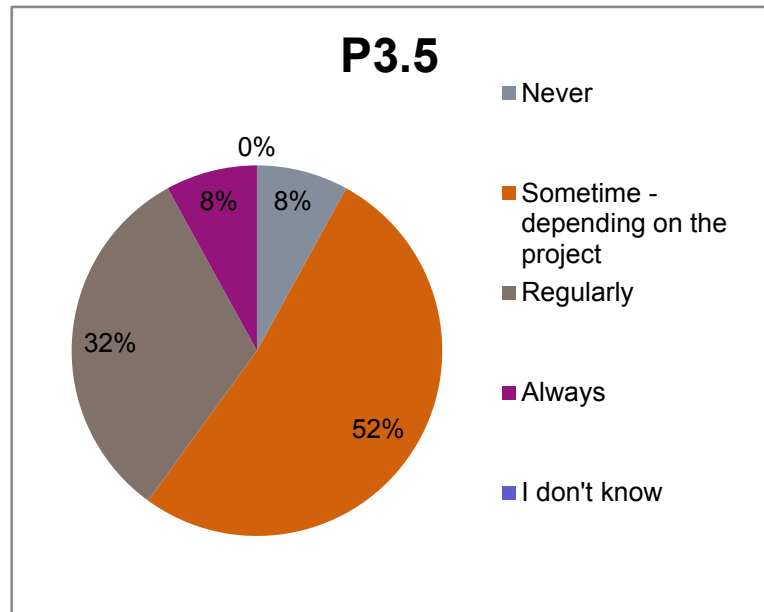
This shows how important IT and business alignment is for the companies in Bosnia and Herzegovina and that the main focus is on that area.



Question P3.5: How regularly does your IT department inform the business about potential useness opportunities enabled/related by new technologies?

Majority of respondents (52%) think that the new, potential business opportunities enabled by use of new technologies are **sometimes shared and informed by IT department** (depending on the project).

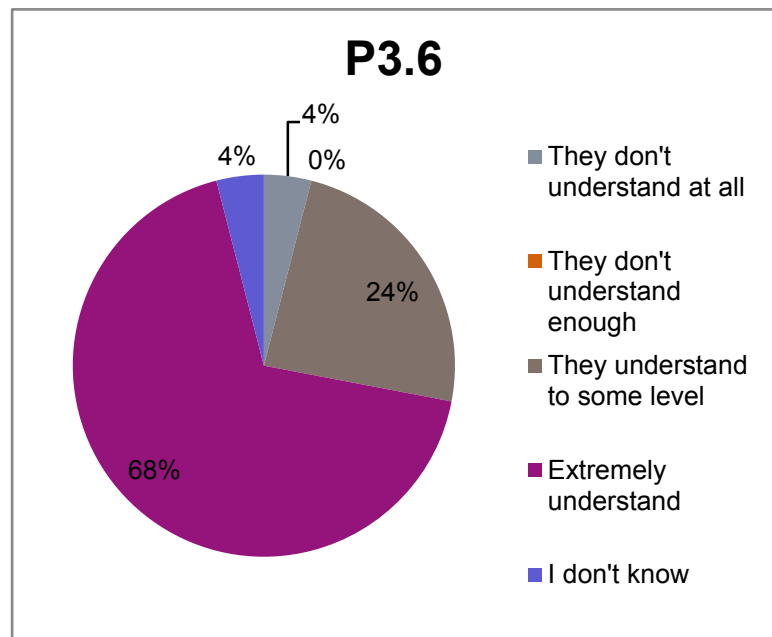
Significant number (32%) considers that their IT department **regularly informs them** about improvements that can be made with use of new technologies.



Question P3.6: To what extent does your IT department understand the business user needs?

Importance of IT understanding of business needs as it has been explained in theoretical part of thesis is proven to be significant to companies.

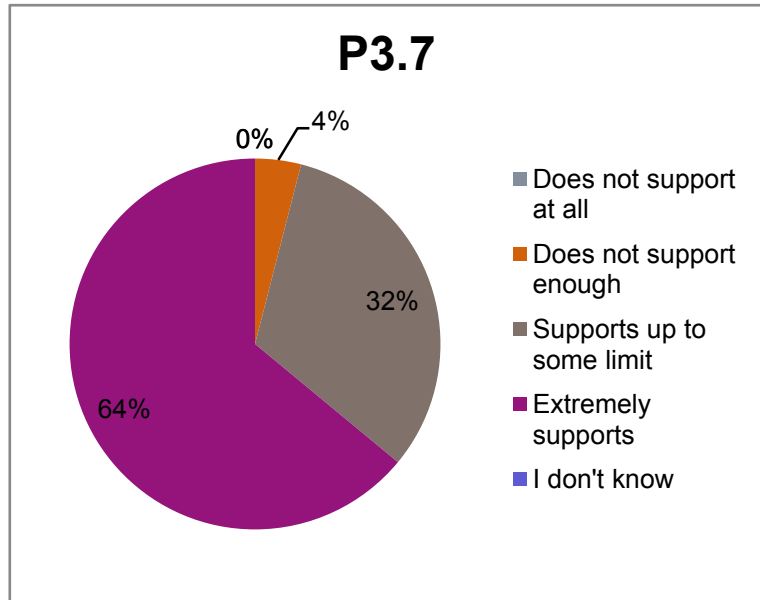
68% responses show that IT department **extremely understands business needs, and 24% understand to some level.**



Question P3.7: To what extent does your IT department support the business needs?

But even though large amount of respondents consider that IT department understands business needs, important was to determine up to which level does **IT SUPPORT** business.

64% responses showed that it extremely supports, and 32% supports up to some level.



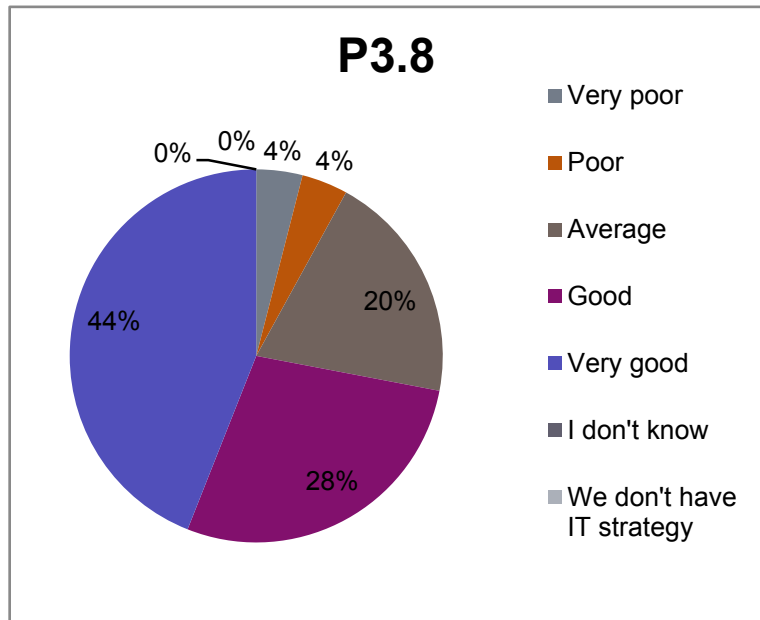
Question P3.8: How would you describe the fit or alignment between your IT strategy and your organization's overall business strategy?

Based on the questions above, we wanted to determine and prove the fit between alignment of IT and business strategy.

44% of responses showed that alignment is very good, and 28% consider it to be good.

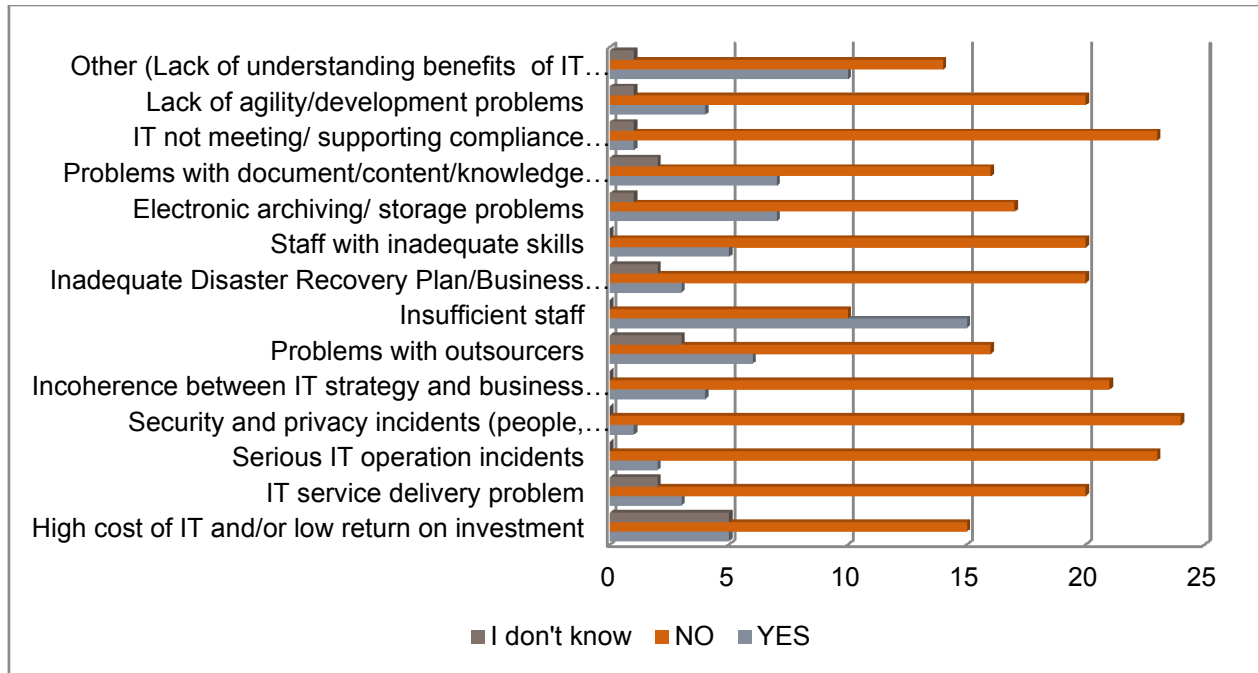
This is nearly **72% of responses which prove that IT department understands and supports all the business needs** to gain competitive advantage among other companies.

IT and business alignment method is as previously stated on highest level.



Part 4 – IT problems and potential solutions

Question P4.1: Which of the following problems have you experienced with IT in the last 12 months?



List of problems, which was taken from ISACA’s Global Status Report 2011 (GEIT) that usually occurs in large environment, was given, where the aim was to determine which of these problems occur. Most of the answers show that there were no significant problems or that respondents don’t know what kind of problems occurred. But few interesting answers and conclusions can be obtained from the graph above.

Problem	Yes	No	I don't know	Percentage
Insufficient staff	15	10	0	60%
Other (Lack of understanding benefits of IT governance on the board and business management level)	10	14	1	40%
Electronic archiving/ storage problems	7	17	1	28%
Problems with document/content/knowledge management	7	16	2	28%
Problems with outsourcers	6	16	3	24%

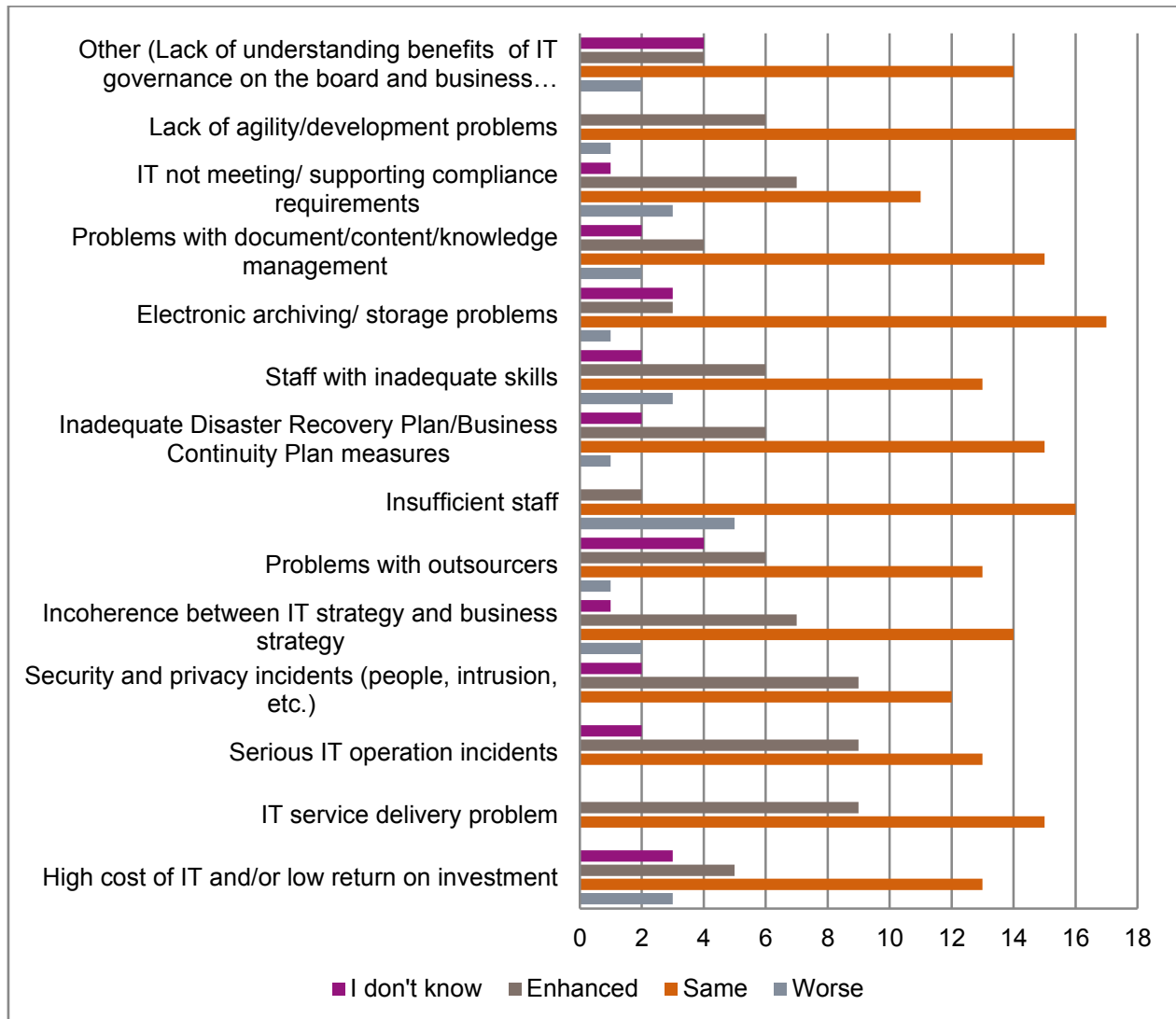
As the percentage is quite important, we wanted to determine the percentage of employees having problem. It was done using formula developed below

$$= [\text{Amount of answer YES (for specific problem)} / \text{SUM (all answers)}] * 100\%$$

Based on the result obtained above, we can conclude that respondents mostly have problem with **insufficient staff (60%)** and **other problems** like lack of understanding benefits of IT governance on the board and business management (**40%**).

Question P4.2: Has the situation regarding these problems deteriorated, stayed the same or improved during the past 12 months?

The question is related to the P4.1 where it was needed to find out if the situation has changed in previous few months.



The emphasis was on the problems that were enhanced, resolved and improved in previous 12 months. Few significant changes are noticeable with above 30% improvement. The detailed list is presented in the table below following the same equation from P4.1 to determine percentages.

Problem	Worse	Same	Enhanced	Unkn	%
IT service delivery problem	0	15	9	0	37,5%
Serious IT operation incidents	10	13	9	2	37,5%
Security and privacy incidents (people, intrusion, etc.)	0	12	9	2	39,13%
IT not meeting/ supporting compliance requirements	3	11	7	1	31,82%
Incoherence between IT strategy and business strategy	2	14	7	1	29,17%
Other (Lack of understanding benefits of IT governance on the board and business management level)	2	14	4	4	16,67%
Insufficient staff	5	16	2	0	8,7%

As we can see the **problem with insufficient staff has not been improved** in the previous 12 months and it has stayed the same in most cases. **Only 9%** of respondents answered that the problem has improved.

The other major problem from question P4.1 regarding **other problems** which were related to IT **has slightly improved (17%)** but mostly it stayed the same as in previous 12 months.

Largest IT related improvements were regarding **IT service delivery problems**, in which **37.5% of responses were positive** – problem was improved (solved). Major improvement was in the area of “**serious IT operation incidents**” which was improved (reduced) by **37.5%**. “**Security and privacy incidents**” as major issue in every company have been emphasized as **reduced and improved up to 40%**. Significant improvement is seen through **alignment of IT and business strategy**, where **29%** of respondents replied positively.

Question P4.3: Do your organization’s current IT governance practices include any of the following practices?

Problem	Yes	No	Partially	I don't know	Follows
The board reviews IT budgets and plans on a regular basis	17	2	2	4	68%
The IT project portfolio is managed by business departments, supported by the IT department	17	3	4	1	68%

Answers provided in questions above, show us that companies generally implement IT governance practices and with this question it was necessary to determine which areas/practices are included.

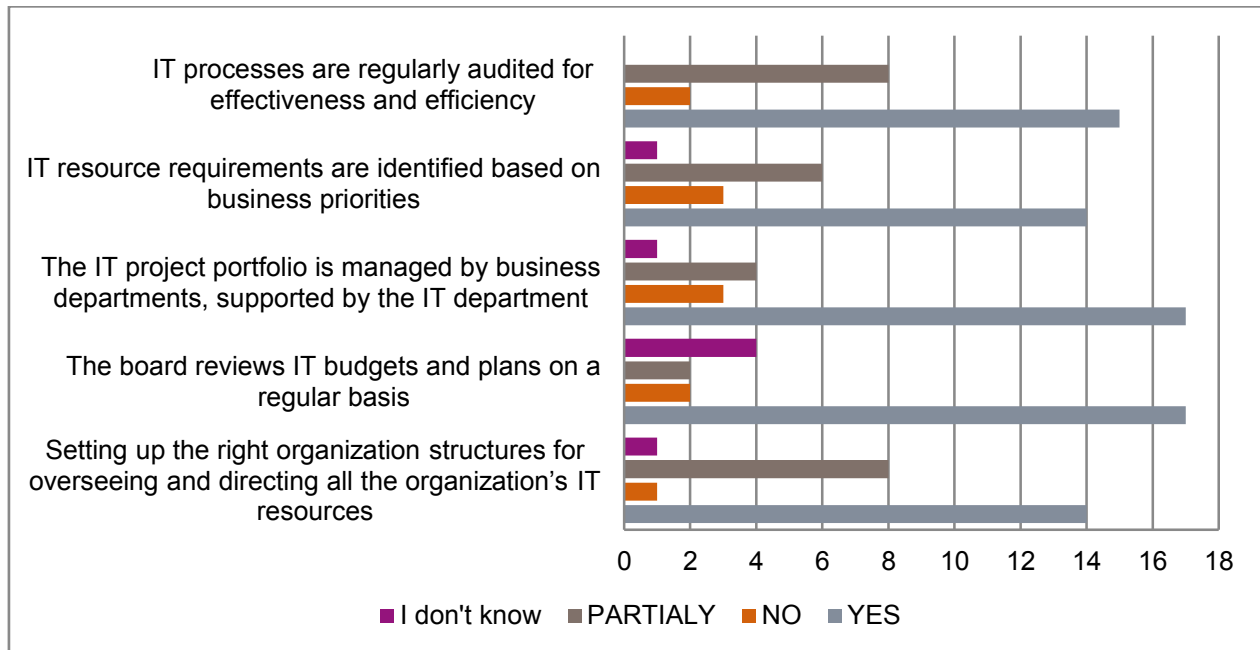
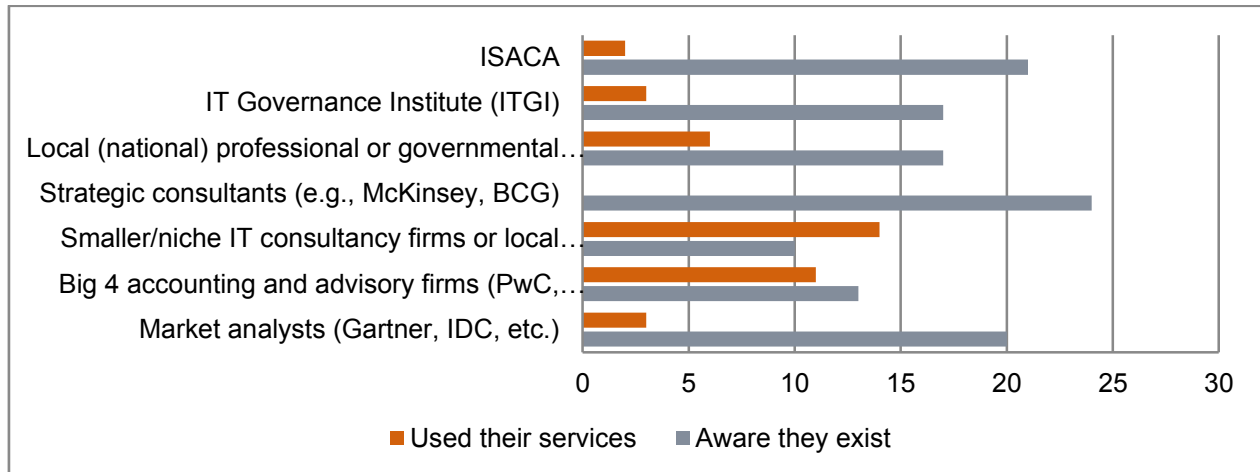


Chart shows us results obtained where **68%** of respondents answered that their companies IT governance practice includes following **“The IT project portfolio is managed by business departments, supported by the IT department”** and that **“The board reviews IT budgets and plans on a regular basis”**. From the chart above we can also notice that majority of companies include most of the regular IT governance practices.

Part 5 – Awareness and Usage of IT Governance Frameworks

Question P5.1: What organizations are you aware of, which provide or implement solutions to IT governance problems and have you, used their services?



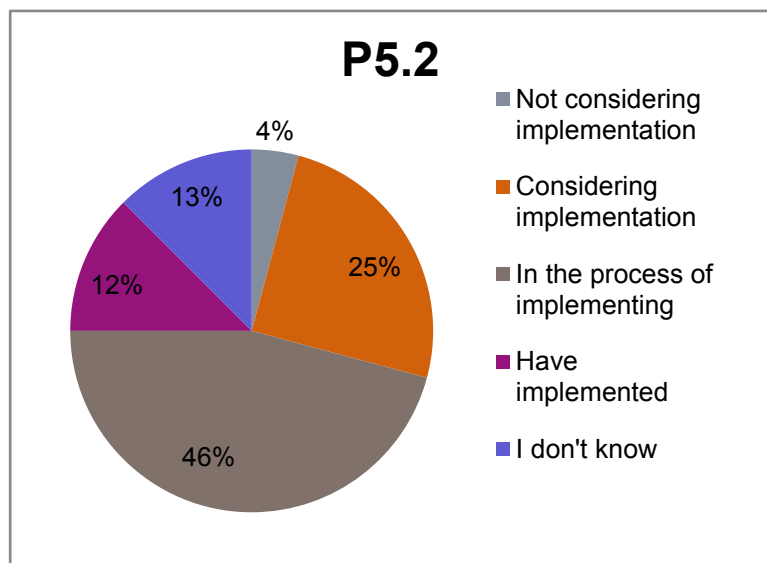
Respondents are mostly aware of the institutions that provide solutions for IT governance. **46 %** of their companies have used services provided by **Big 4** accounting and advisory companies such as **Deloitte, PwC, KPMG or Ernest & Young**.

Majority of nearly **58%** have used services of **smaller IT consulting companies**, which are usually locally based.

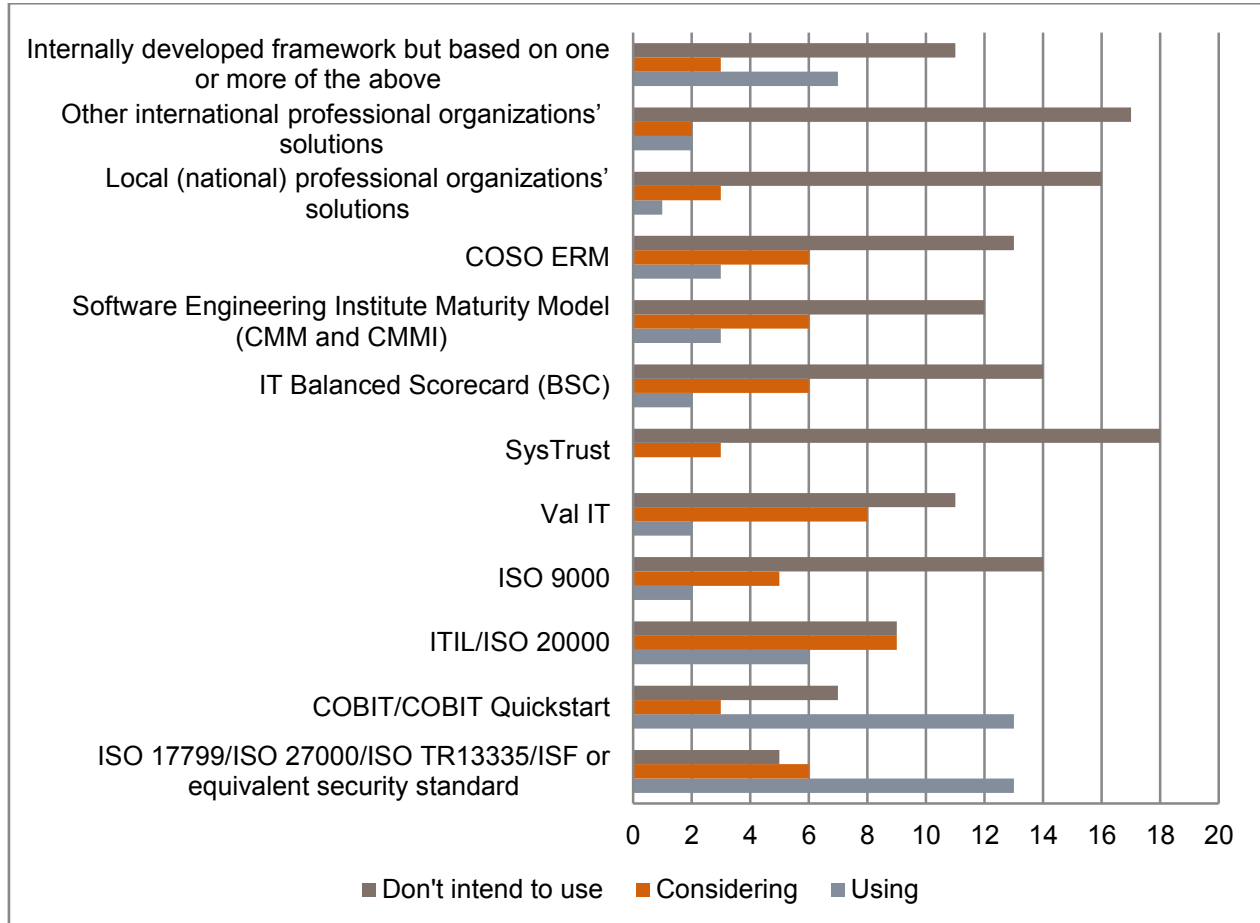
Question P5.2: Have you implemented, are you in the process of implementing or are you considering implementing improved IT governance practices?

As it is seen from graph, **46%** of respondents are **currently in the process of implementing IT governance practices**, **12%** of them already **have implemented**, while **25%** are **considering implementation**.

Only 4% of respondents do not consider implementation of IT governance practices.



Question P5.3: What solutions/frameworks do you use, are you considering using or not using?



Research has given some interesting result regarding the frameworks or standards which companies choose to implement.

Framework	Using	Cons	Not	Using %	Cons %
ISO 17799/ISO 27000/ISO TR13335/ISF or equivalent security standard	13	6	5	54,17%	25%
COBIT/COBIT	13	3	7	56,50%	13,04%
Val IT	2	8	11	9,5%	38,10%
Internally developed framework but based on one or more of the above	7	3	11	33,33%	14,29%

Respondents consider that their companies **mostly use ISO security standards**, around **55%**, and **25%** of them **consider implementing** it in the future.

Majority of respondents are using **CobiT, international framework** as basis for their IT government practices, **56.5% of them**, while only **13% consider implementing it**.

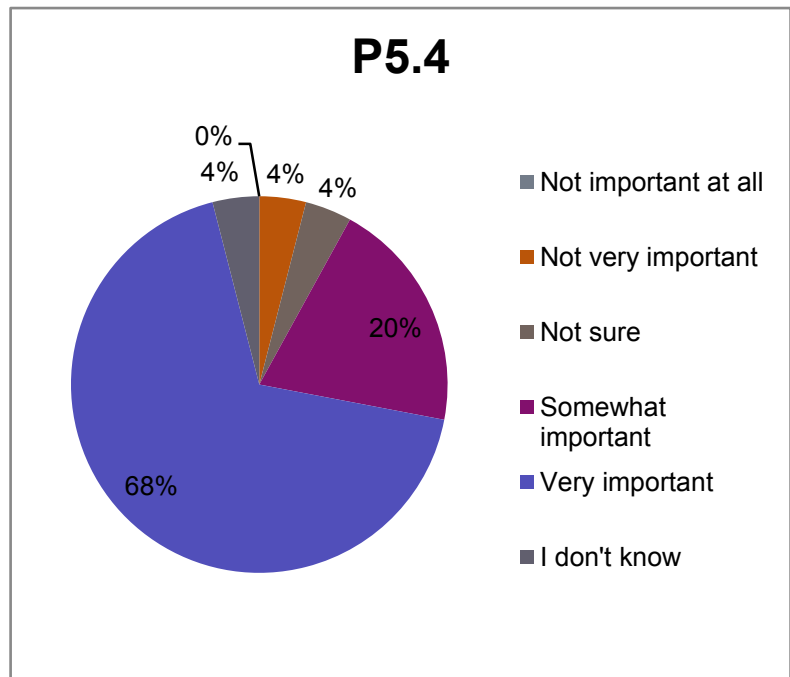
Interesting data obtained is that **38%** of respondents are mostly interested and **considering implementation of Val IT**, but only **9.5% of them are using it**.

Significant amount of respondents are using some of the internally developed frameworks or combination of above mentioned (**33.33%**), and **14%** are considering implementation.

Question P5.4: How important is IT risk management to your organization?

Interesting fact is that nearly **68%** of respondents replied that IT risk management is **very important** for their organizations, **20%** that it's **somewhat important** and only **8%** (4% + 4%) consider it not important for their organization.

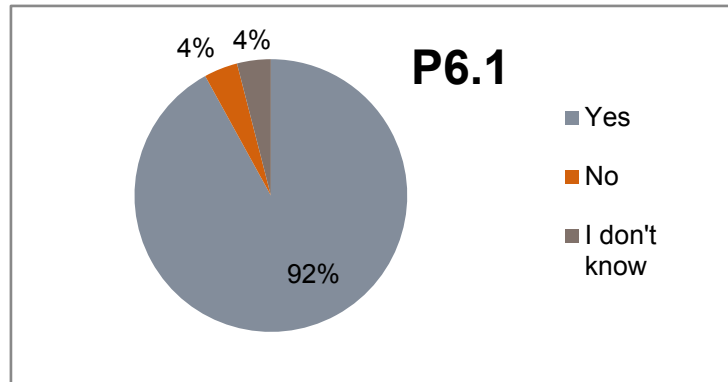
Looking to the future, internal controls should gain an important place in management structure and corporate risk management should become a key priority for the modern business management.



Part 6 – Awareness and Usage of COBIT

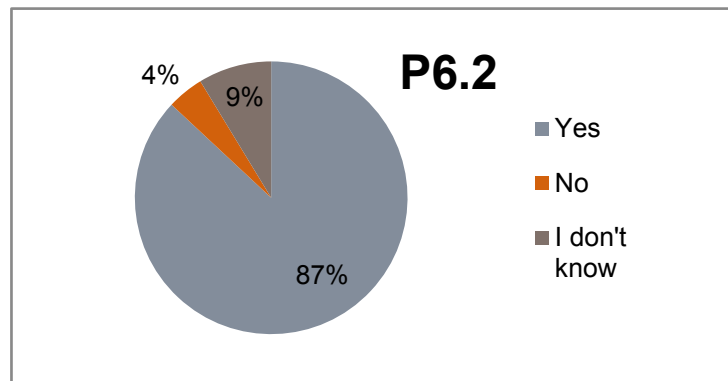
Question P6.1: Are you personally aware of the existence of COBIT?

It is encouraging that **92% of respondents** are aware that there is a framework for corporate governance which is also used for it auditing.



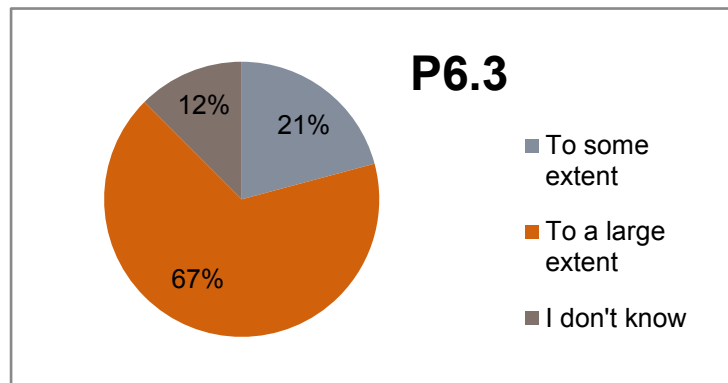
Question P6.2: Are you personally aware of the contents of COBIT?

Majority (**87%**) of respondents are aware of the COBIT content, framework that provides the ability to better understand the needs of other participants in corporate management, and gives out examples of best practices in each of the IT generic processes.



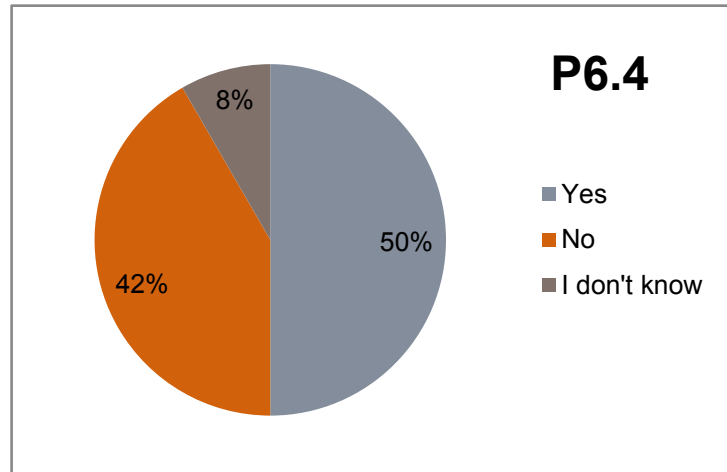
Question P6.3: To what extent are you aware of the contents?

The question was formulated in such way to determine up to which extent the respondents are aware of the COBIT contents. **67% are aware to a large extent**, and **21% are aware to some extent**.

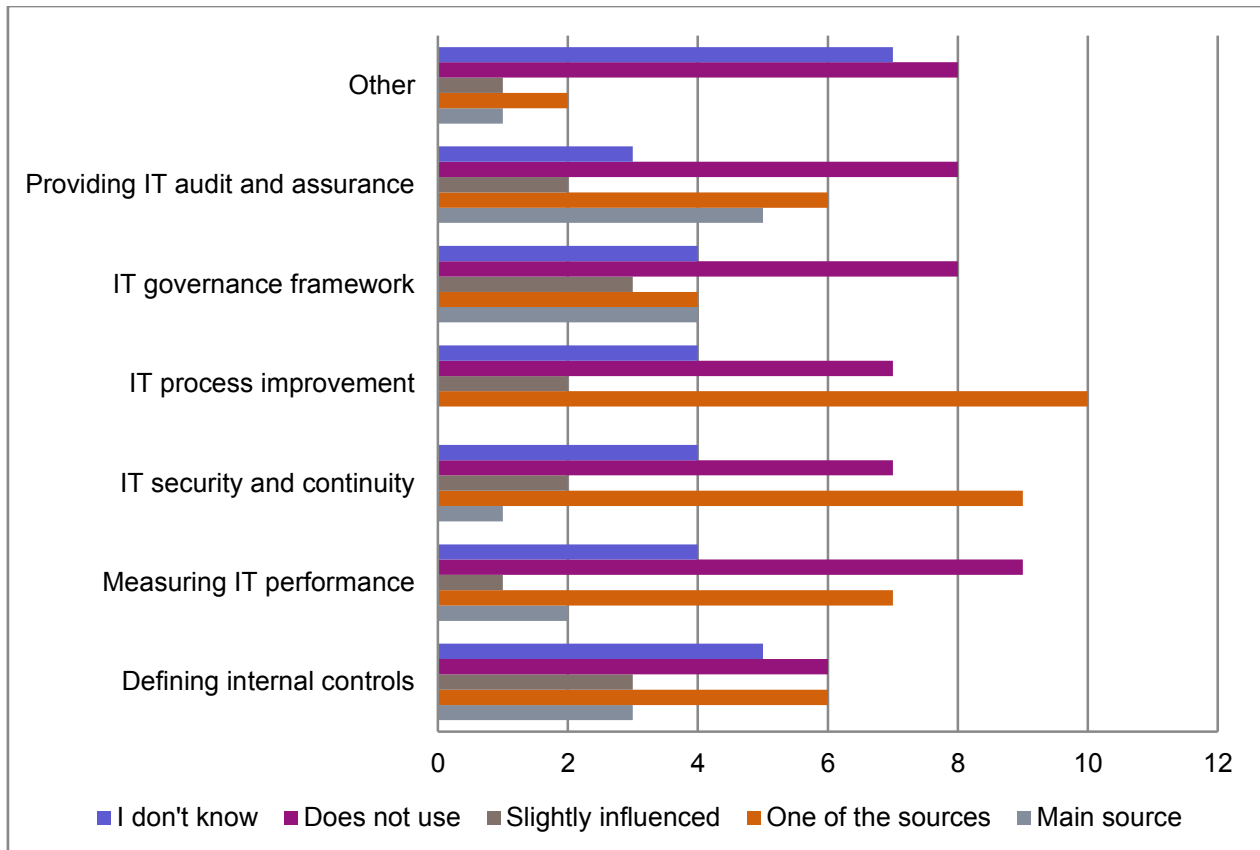


Question P6.4: Does your organization (in any area) currently use COBIT?

Half of the respondents - 50% replied that their companies use COBIT framework, while 42% of them replied negatively.



Question P6.5: Does your organization (in any area) use COBIT for any of the following activities, and to what extent is COBIT used?



Activity	Main	One of	Slight	Not	Don't know	Main %	One of %
Defining internal controls	3	6	3	6	5	13,04	26,09
Measuring IT performance	2	7	1	9	4	8,7	30,43
IT security and continuity	1	9	2	7	4	4,35	39,13
IT process improvement	0	10	2	7	4	0	43,48
IT governance framework	4	4	3	8	4	17,39	34,78
Providing IT audit and assurance	5	6	2	8	3	20,83	25,00
Other	1	2	1	8	7	5,26	10,53

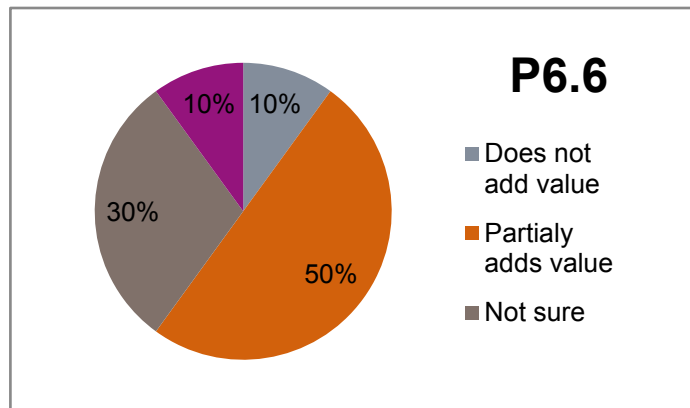
Some interesting results appear in the question above stated. Most of the respondents use CobiT as main source for **providing IT audit and assurance (20.83%)** and as an **IT governance framework (17.39%)**. On the other hand, as one of the sources it is included in activities such as IT process improvement (43.48%) and IT security and continuity (39.13%).

But combined together, as a main and one of the sources, COBIT is used for following activities:

- Providing IT audit and assurance (46% combined)
- IT security and continuity (44% combined)
- IT process improvement (44% combined)

Question P6.6: If your organization uses COBIT, how much value it adds to IT initiatives?

Last question in survey was related to value which COBIT brings to company, and the half of the respondents **(50%) replied that it partially adds value**, 30% are not sure, and 10% for adding exceptional value. Remaining 10% consider value is not added.



Comparison to 2009 research results

Research done for this thesis had basis in the similar research from 2009. The aim of research was to prove the hypothesis of evidential increase in opinion about importance of IT technologies implementation and related standards/frameworks.

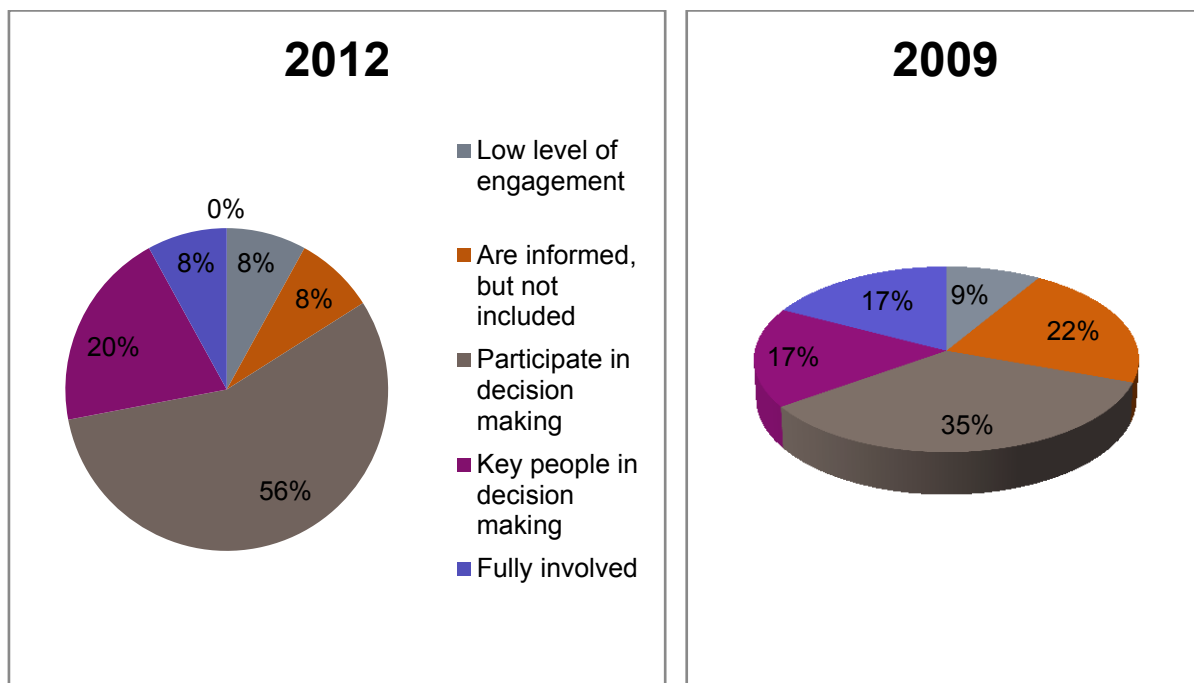
In the previous part, research results were presented and visualization aids such as graphs managed to present valuable information regarding thesis topic.

Even though both researches have extensive question areas and large amount of questions, only the ones that show biggest differences and increase in opinions will be given bellow.

Previous research was conducted by MSc. Amra Alagić who currently works at Federal Banking Agency in Bosnia and Herzegovina, and her approval was given to use the details bellow.

QUESTIONS

Question P2.4: How would you describe Management's level of involvement in IT governance?



Interesting fact is that 56% of respondents in **2012** consider that higher management participates in decision making when it comes to IT governance, while in **2009** only 35% gave same answer which makes 21% increase in three years.

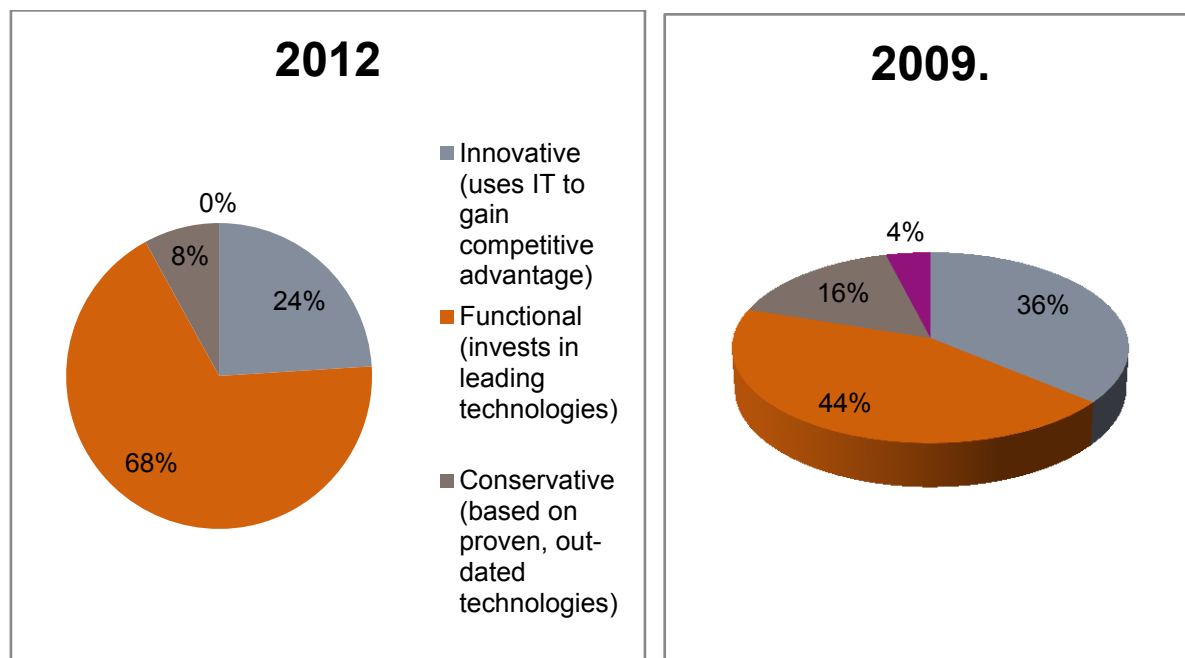
Presented results show us how higher management levels tend to understand IT governance more and they are getting involved

Question P2.3: How would you describe the philosophy of IT within your organization?

Out of three given answers to choose, **68%** of respondents **in 2012** consider that the philosophy within their organization is **functional** which means that they invest in leading technologies. Same question **in 2009** had **44%** of responses which shows that **increase of 24%** (almost a quarter of all the respondents) their companies invest into leading technologies.

Considerable drop from 36% to 24% shows that respondents believe their organizations are **innovative**, uses IT to gain competitive advantage.

This shows us how organizations perceive IT as an important addition to their business strategies and ideas.

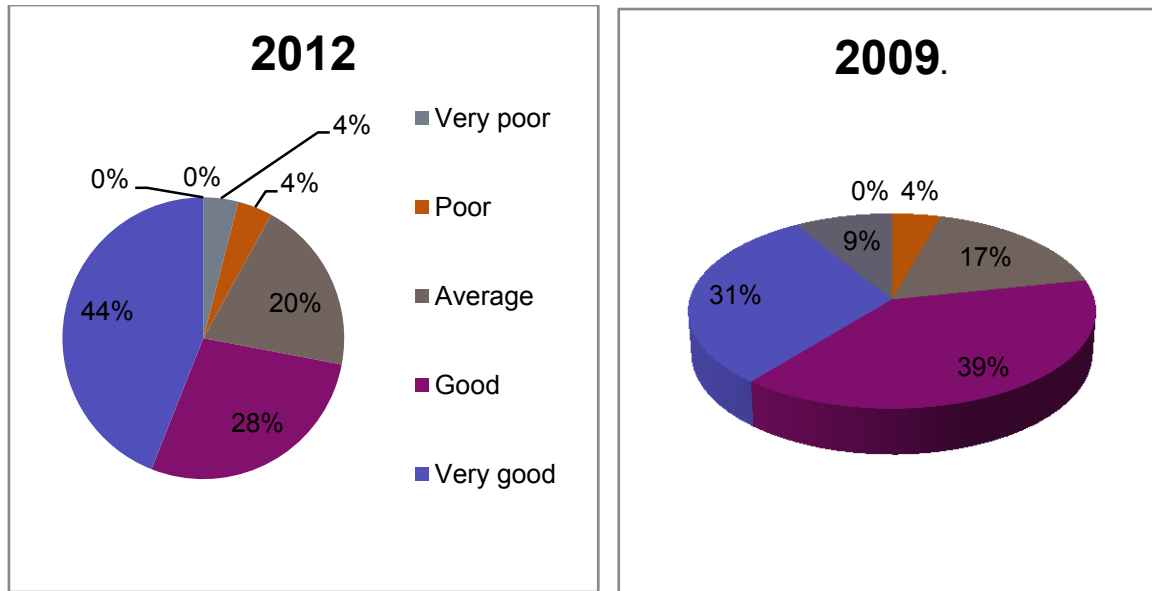


Question P3.8: How would you describe the fit or alignment between your IT strategy and your organization’s overall business strategy?

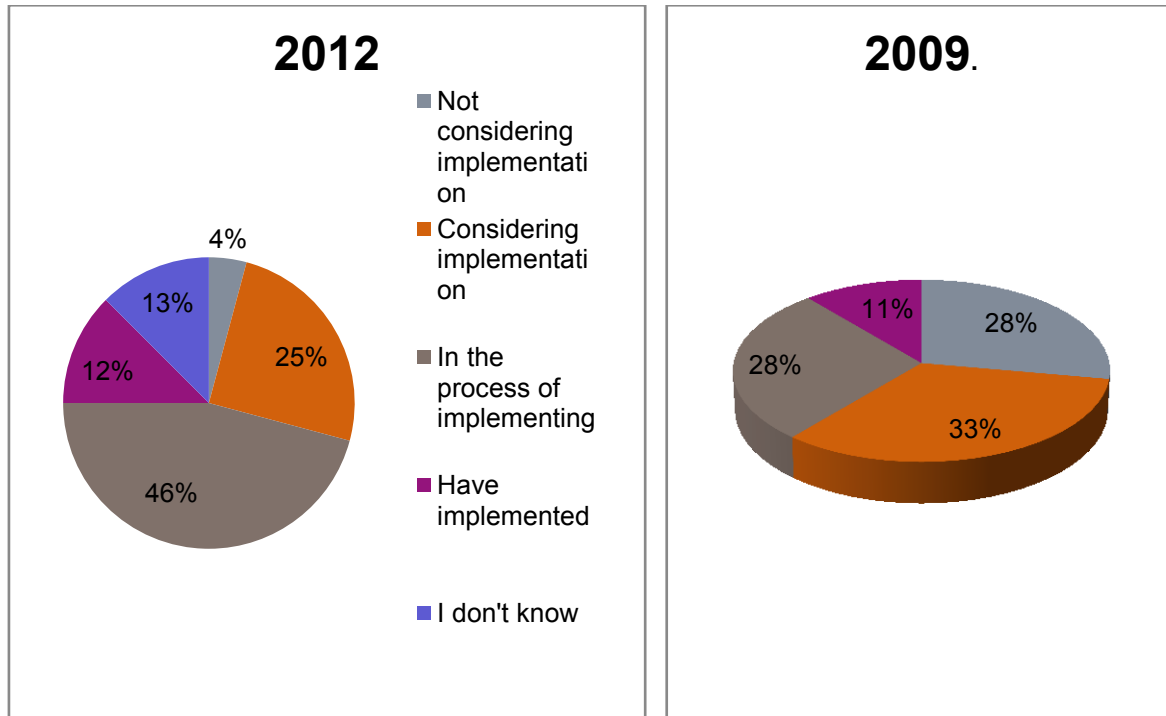
44% of responses in **2012** showed that alignment is **very good**, and **28%** consider it to be **good**. This is nearly **72%** of responses which prove that **IT department understands and supports all the business needs** to gain competitive advantage among other companies.

In comparison to that, the **2009 research** showed that only **31%** of respondents consider alignment to be **very good**, while **39%** consider it **good**. Based on logical conclusion we can see that opinion has changed from good to very good in previous three years.

IT and business alignment method is as previously stated on highest level.



Question P5.2: Have you implemented, are you in the process of implementing or are you considering implementing improved IT governance practices?

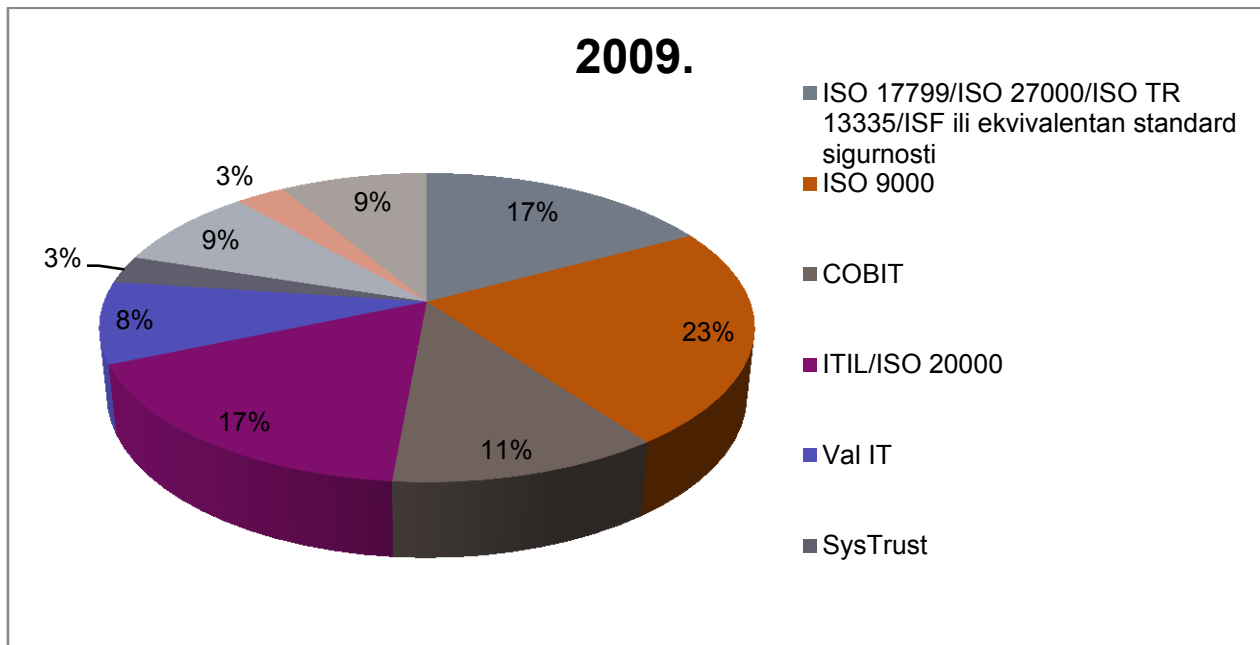
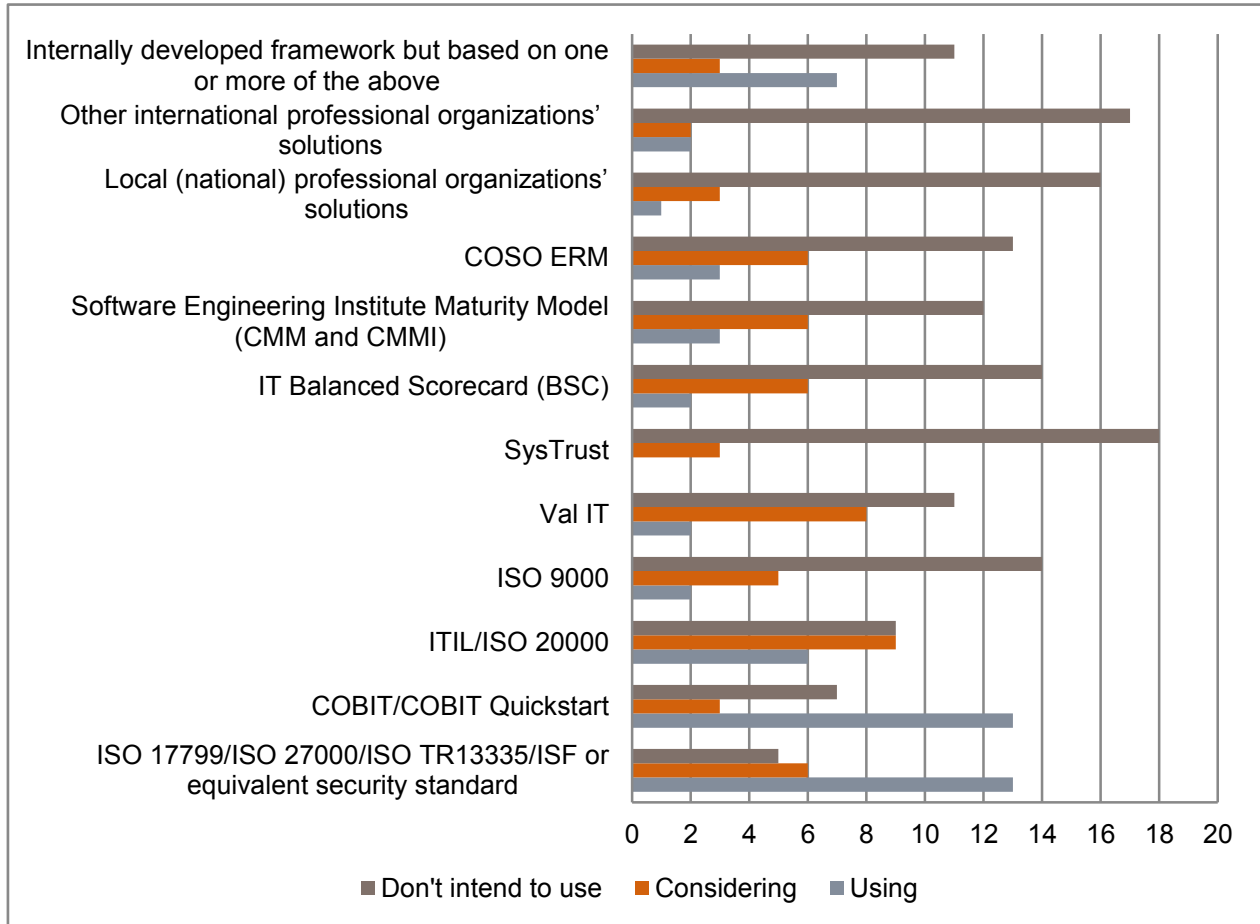


As it is seen from graph, **46%** of respondents in **2012** are **currently in the** process of implementing IT governance practices, while only **28%** of respondents were implementing them **in 2009**.

25% of respondents are **considering implementation** compared to 33% in 2009. Successfulness of importance is shown through “not considering implementation” answer which has dramatically changed in 3 years.

28% were **not considering implementation** in 2009, while only **4%** do not consider implementing standards in 2012.

Question P5.3: What solutions/frameworks do you use, are you considering using or not using?



Respondents **in 2012** consider that their companies **mostly use ISO security standards**, around **55%**, and **25%** of them **consider implementing** it in the future (based on the research answers described in previous part).

In 2009 on the other hand only around **17%** of answers implement same security standards.

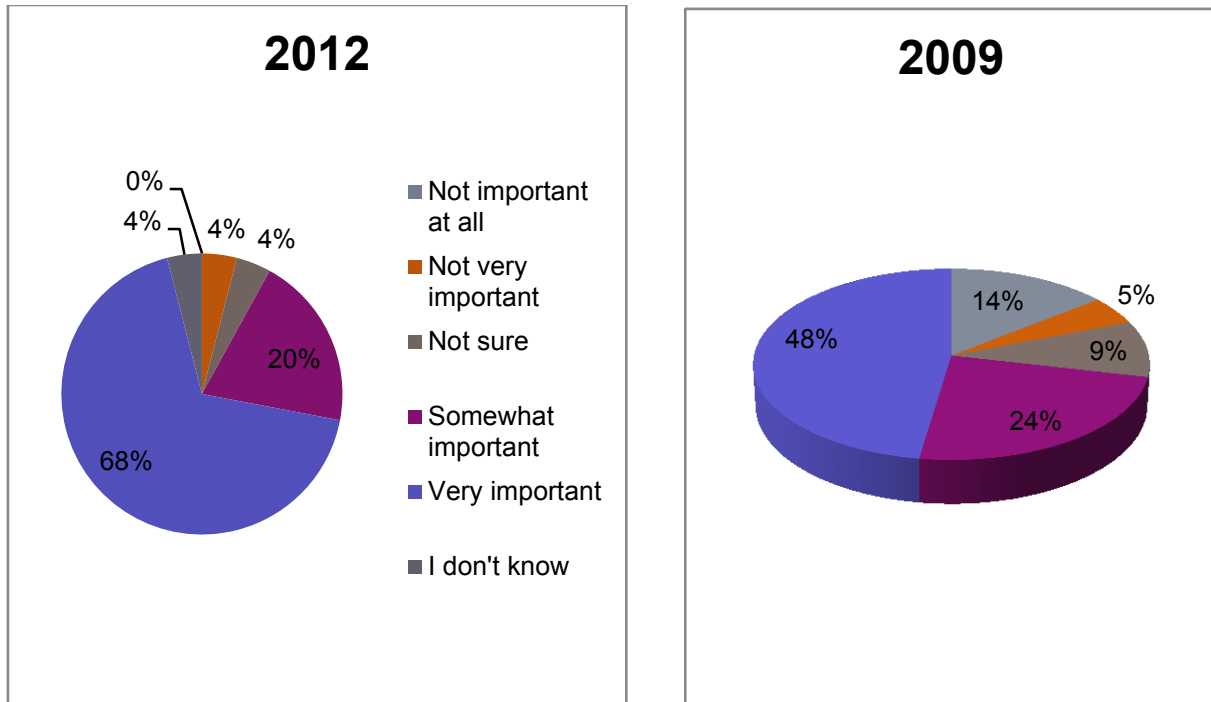
Majority of respondents **in 2012** are using **CobiT, international framework** as basis for their IT government practices, **56.5% of them, while only 13% consider implementing it.**

This is significant growth in COBIT popularity from 2009, where this framework was only on the 4th place based on its importance.

In previous three years, importance of COBIT has changed dramatically which will be shown in future results.

Interesting data obtained is that **38%** of respondents are mostly interested and **considering implementation of Val IT, but only 9.5% of them are using it which is nearly the same number as from 2009 (9%).**

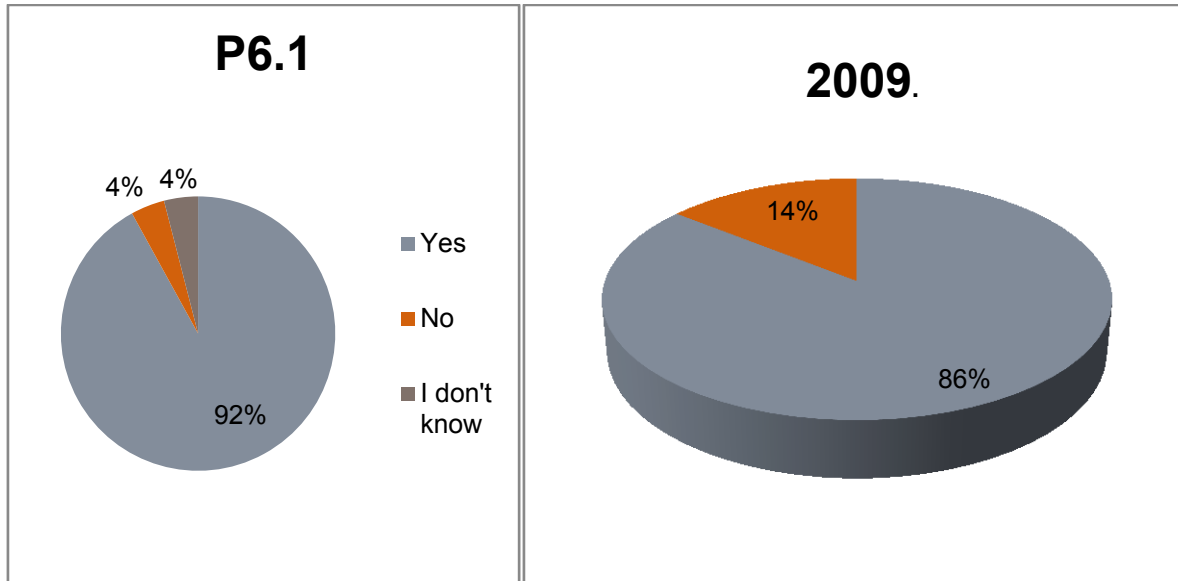
Question P5.4: How important is IT risk management to your organization?



Looking to the future, internal controls should gain an important place in management structure and corporate risk management should become a key priority for the modern business management. Clear results about importance of risk management change in previous few years can be seen on picture above.

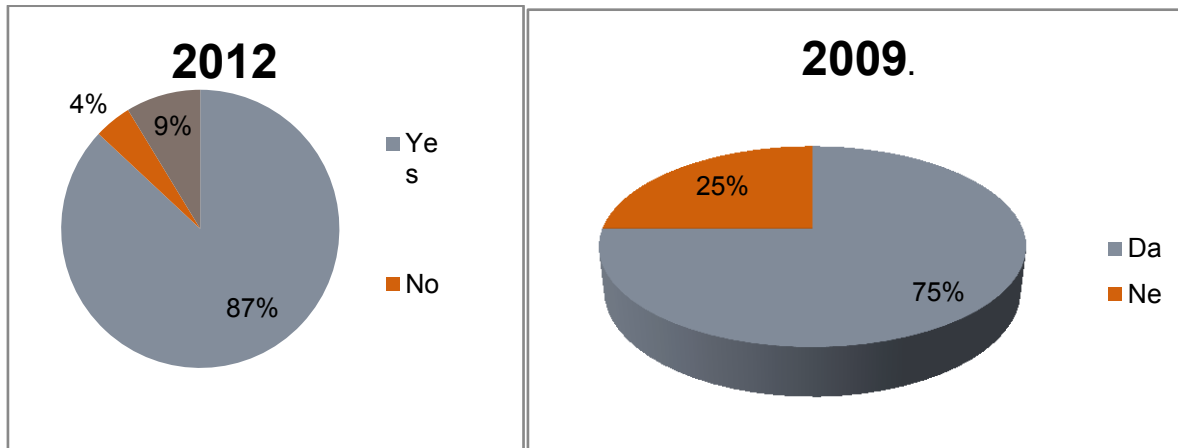
Nearly **68%** of respondents **in 2012** replied that IT risk management is **very important** for their organizations, **20%** that it's **somewhat important** and **in 2009 48%** of respondents considered IT risk management **very important**, and **24%** **somewhat important**. This clearly proves **20% change** in people's opinion regarding IT risk management.

Question P6.1: Are you personally aware of the existence of COBIT?



It is encouraging that **92% of respondents in 2012** are aware that there is a framework for corporate governance which is also used for it auditing, while in **2009 86%** were aware of that fact.

Question P6.2: Are you personally aware of the contents of COBIT?



Majority (**87%**) of respondents in 2012 are aware of the COBIT content compared to **75% in 2009**. COBIT is framework that provides the ability to better understand the needs of other participants in corporate management, and gives out examples of best practices in each of the IT generic processes.

As we can see from the data presented above, significant changes have been noticed in previous three years. This directly proves hypothesis that higher management actually

considers IT, governance, and auditing an important part of modern business development.

Research results

The rapid development of new technologies brings new types of risks and manifestations with itself. Research that was conducted in the territory of Bosnia and Herzegovina has shown satisfactory conditions, but at the same time, low level of awareness about growing risks associated with information technology and information system auditing.

Research showed that significant amount of respondents consider IT generally important for their business. **Question P2.1** about importance of IT to successful delivery of business strategy showed **76%** of respondents replying that it is very important. At the same time in **Question P2.2** **88%** of respondents believe IT brings fundamental (essential to business) value in order to e.g. reduce costs, improve customer relations, risk management. Companies in Bosnia and Herzegovina should follow practices of countries with developed information system auditing. In such developed countries, obligation of systematic risk assessment is common with use of information technologies. Companies should not wait for necessary legislations, but should try to implement risk assessment through intensive cooperation of internal and external auditors.

If there aren't appropriately developed policies, employees and management are not aware of the risks and personal responsibilities, and therefore management accepts unknown level of risk rather than consciously deciding on their own, what level of risk to accept. In such circumstances management has false sense of security because it relies on ineffective controls. Through security policy, management decides on desired level of protection and management of risks by which it demonstrates its willingness to protect critical information and assets from loss, damage or misuse.

Using these "techniques" management increases level of trust from outside organizations, business partners, as well as trust and credibility within organization itself. Information system security policy should contain a minimum of objective and scope of security policies, principles of information security management resources, general and specific responsibilities relating to information security.

As it was further researched, **Question P3.2** showed that respondents give their opinion on IT governance maturity levels in their companies, where **28% percent** believe that "well-defined IT governance measures and processes are in place". **Same amount of**

28% believe that their company has a “well-functioning IT governance processes and performance-measuring system in place”.

In order to contribute to reducing risk of information technology application, it would be useful to take initiative and advise management about practices of strategic approach towards information technologies. Strategic plan for development/implementation of information technologies usually results from a strategic development plan which is aligned with business goals. In the absence of strategic plan for information technology, organizations can face various types of risks. Weak or strategic plan which is not present can lead to development of information systems which do not meet needs of business.

Question P5.4 showed that **68%** of respondents consider IT risk management **very important** for their organizations, **20%** that it's **somewhat important** and only 8% (4% + 4%) consider it not important for their organization.

Integrity of hardware and software solutions can face problems in absence of clear development vision, which pushes organizations to take reactive role and rely on outdated computer equipment and programs. Strategic development plan for information technologies as a fundamental document shows how much management cares about establishment of effective systems of internal controls.

Developed plans like this one help auditors in obtaining an independent assessment of organizations policies, procedures, standards and practices for preservation of electronic information from loss, damage, unintended disclosure, or denial of availability. In addition to this, auditors can help to identify new information systems at the earliest stages of development.

Considering implementation of internationally recognized standards, research showed in **Question 5.3** that their companies **mostly use ISO security standards**, around **55%**, and **25%** of them **consider implementing** it in the future.

Majority of respondents are using **CobiT, international framework** as basis for their IT government practices, **56.5% of them, while only 13% consider implementing it.**

As **CobiT** represents most popular and widely implemented framework for IT auditing and parts of it for IT governance, we should pay attention to some of the facts that slow down implementation in Bosnia and Herzegovina. Those facts are quite similar to ones from 2009 and yet have not been changed/improved:

- Currently there is relatively small amount of developed IT organizations that are ready or mature enough to implement COBIT,

- There is no active regulatory pressure and legislation currently present such as Decision of Minimum Standards of Information System Management in Banks - **(Odluka o minimalnim standardima upravljanja informacionim sistemima u bankama)** and Decision on Minimum Standards of Externalization/Outsourcing - **(Odluka o minimalnim standardima upravljanja eksternalizacijom)**, do not require the introduction of the framework and standards for IT governance or IT auditing,
- Construction of information society is progressing slowly which is directly influenced by insufficient institutionalized encouragement or the help of “spreading IT culture and standards”,
- Most successful examples which we can find, regarding implementation and establishment of IT governance, are in areas of banking and financial activities or as a part of the harmonization and implementation of standards at the level of international corporations operating in Bosnia and Herzegovina,
- COBIT framework must be adapted to use in each individual organization, which requires modification or adaption of existing processes, for example, awareness about choosing processes of utmost importance is not recognized, expanding the application of best practices, and gradually applying/extending IT governance,
- As important fact, successful implementation requires change in mindset, orientation and training of organization and its employees. Organizations such as community of auditors (operation managers, risk managers, IT, etc.) that would advocate establishment of globally accepted frameworks which can ease communication of the participants in the management of information technologies has not been established.

Even though currently situation is not perfect, clear improvements can be seen. This is clearly described through comparison of 2009 and 2012 research results.

Based on determined problems which can lead to difficulties in COBIT implementation, popularization of IT auditing, few general as well as “in-company” improvements and suggestions are given:

- Increase popularity of first educational portal in IT auditing www.itrevizija.ba and provide all interesting parties with valuable materials and articles related to implementation of frameworks,
- Provide basic training and presentation of the need to implement corporate governance frameworks, IT management, and linking business and IT processes

through popular on-line educations, consultant lectures, presentations, case studies, etc.

- Plan, outline and determine benefits of organizing first IT auditing conference in Bosnia and Herzegovina with a unique goal of establishing IT auditing community, ISACA chapter, and Cobit 5 as main IT auditing standard
- Provide management support in companies and commitment for the IT governance establishment
- There are links with leading international standards and recommendations (ISO, ITIL) that can be easily used in organization which have already implemented parts of entire standards,
- CobiT framework gives out possibilities for better understanding of other participants in IT management/governance and good examples of practices in each of the generic processes which can be used in everyday business communication,
- Emphasize why CobiT can be used as the basis for development of IT processes, clearer understanding of risk, development of audit programs
- Promotion of the framework within auditing community (simpler auditing processes, performance measures, risk evaluation, result presentation) and other interested parties/organizations (monitoring risks, regulatory agencies) and with other segments of society (protection of valuable assets, security and interests of citizens, establishment of European and global recommendations and standards).
- Assessment of the most important IT processes and controls helps implementing the necessary control frameworks (including organizations that are not small)
- Experiences and examples from similar countries and European Union should be used, especially in the areas regarding implementation of regulatory initiatives.

CONCLUSION

Information technology management must be integrated part of every company. Considering information technology as an expense rather than investment, brings negative effects to the way of doing business according to today trends worldwide. But to really understand the positive changes in IT investments, it is necessary to determine where the most financial resources are spent and how to cut down losses without affecting business processes. It is important to keep in mind that the costs of IT infrastructure/environment should never exceed main financial results/revenue.

Best practices and methods for this exist but each of them requires knowledge of their own organizational and information technology needs. The ability of management to identify and minimize foreseeable risks is important in terms of computer processing of data, which by its nature involves additional risk factors. Companies should be aware of these risks and develop appropriate policies and procedures to reduce them.

Written procedures and politics are main mechanism through which management communicates its views and requirements of employees, customers and business partners. These views and claims derive from considered risks.

Following countries with strong traditions, where the mandatory standards and legislations incorporated are general requirements and are well defined, would allow effective operations of internal controls for the management. Clearly communicated policies are the most important factor in their successful implementation. In order to successfully adapt to changes, employees should be given sufficient training and necessary specialist knowledge to teach them about the procedures of good governance and the importance of internal controls.

Technology by itself is no longer in the forefront – the business scope and effects of technology applications are. Rapidly maturing realization is that the success or failure of information technology projects has a CRUCIAL impact for business success, gaining competitive advantage and winning favorable market position.

Business informatics is slowly but surely entering a stage of maturity as proven through Governance of Enterprise IT 2011 research. At this development stage, management attention is directed and focused on issues of strategic management of information technologies, seeking and finding optimal paths, ways and modalities of IT processes and key corporate business processes alignment, their integration and standardization.

Top management must understand the development trend of information technology, carefully follow and understand their implications and possible impacts on business management.

Achieved goals of preserving the assets and data integrity, improving the effectiveness and efficiency of the systems can easily turn into a source of competitive advantage ahead of market competitors.

As IT becomes more critical point for the survival of the company in addition to facilitating the growth, IT Boards should consider defining scope widely. Not only should they provide advices on strategy while assisting the Board, but should also focus on IT value, risks and performance.