4.0 Introduction

This chapter presents the results of the statistical analysis of this thesis and the recommendations that the researcher recommended, depending on the result of the statistical analysis of this thesis and the view of the researcher.

4.1 Result

After conducting the field of study, the study reveals that some factors affect outsourcing software development in Sudan, The researcher used the scientific method to measure and get a semi shared opinion , points of view, the shortcomings and obstacles of it .By applying different questionnaires concerning the related experimented subject due to inspects of its cost and salary. So the researcher distributed two questionnaires with qu estions to a sample size of 43 respondent's users and a sample size of 42 respondent's experts.

4.1.1 from the point of view of users:

The user as the most important supporting factor for the success of any project, the researcher faced him with questionnaire concerning the case of outsourcing software development containing the followings:

- The compatibility of output with their requirements
- Their involvement in the requirements specifications , training
- User manual
- Technical problems facing them
- The external systems and the adjustment to the continuously, changing policies
- Also about the experiment of outsourcing in Sudan, etc …

So the results of statistical analysis were the followings:

- 81% from the Sample believed that in case of outsourcing software development the output was compatible with the requirement (***this result was measured by asking the user about the extent of involvement in the identification requirements in the new system*****).**
- 81% from the Sample believed that the failure of outsourcing software development resulted from the weak specification of requirements.
- 52.4% from the Sample believed in the ability of contract of outsourcing software development to handling changes.
- 50.9% from the Sample believed in the organization cares and provides user manuals.
- 57.8% from the Sample believed in the organization attention to end users and usability of the system.
- 53.7% from the Sample knew the technical problems and how to deal with them.
- 26.2% from the sample considered the outsourcing systems successful and abilities to meet their requirements.

The previous results noted the organizations ignorance about the end user, user manual, usability of the system and the technical problem although these are most important factors in the success of outsourcing software development.

A large proportion of those surveyed considered the outsourcing was not successful and it was not meeting their requirements.

4.1.2 from the point of view of experts:

The second questionnaire passed to the experts who possessed wide experiences, professional knowledge, logical answers and helpful tendency both for solving the problem and assisting the researcher to get scientific answers, included the followings:

- The compatibility of output with requirements.
- The risk
- The user training
- the scientific method to study the outsourcing
- The contract
- The security and other problems related to the outsourcing project.
- Also about the experiment of outsourcing in Sudan, etc.

So the results of statistical analysis were the followings:

- 58.3% from the sample believed in the organization outsourcing usage and taking in account the risks.
- 60.5% from the sample believed in the organization trusted partner and established model contract that made sense.
- 60.5% from the sample believed in outsourcing software development conformity with required specification.
- 74.4% from the sample believed in failure of outsourcing software development as a result of weak specification requirements.
- 74.6% from the sample believed in relation between the efficiency and effectiveness of software outsourcing development.

- 67.4% from the sample believed in outsourcing development obstacles effects.
- 30.2% from the sample believed that the outsourcing software development failure resulted from user's lack of skills and abilities.
- 78.4% from the sample believed that the failure of outsourcing software development resulted as failure in decision process.
- 63.5%from the sample believed in the organization's assessment and performance measure.
- 80.7% from the sample believed that there were strict security guidelines for outsourcing software development and policies.
- 58.4% from the sample believed that the current contract of outsourcing software development had the ability for handling change.
- 50.0% from the sample believed in the organization attention for end users and usability of the system.
- 84.9% from the sample believed that, organizations should study outsourcing before introducing and decision making, in scientific manner according to considerable needs.
- 58.2% of the sample believed that the organizations were interested to ensure that, the transfer of new knowledge and experience did not lead to the loss of skills and programmers expertise due to outsourcing software development.
- 46.5% from the sample believed that the high cost of outsourcing software development was justified.

It noted from the previous result, that experts indicated problems in outsourcing software development implementation added to the high cost, weakness of existing contracts and trusted partners, lack of the organizations attention towards the end user, the current programmers and systems usability.

4.2 Recommendations :

4.2.1 With respect to the user

In case of end-user outsourcing software, attention must be taking into account of the followings:

1- The requirements for the new system: involvement of all users in the characteristics of requirements, and specifications for the system, not ignoring the status and extent of their knowledge of business process.

2- When outsourcing software. Language and culture problems must be addressed as biggest obstacles and cause failure for user to deal with the developer, ignoring this factors leads to weak requirements specifications.

3- Usability of the system: Must take the opinion of the users in

- **Language**, where Language was the most important barrier which hinders users from communicating with the system.
- **The windows,** easy access sequences and clarity of windows,.
- **Congested screens.**

4- Address the technical problems that users encounter these include**:**

The network, availability of hardware and devices as well as the processing speed. One of the user concerns was the availability of the

user manuals. Most of the companies that operate the systems of outsourcing software did not care about the development of user's manuals. A user guide was the most important mechanism to assist in understanding the regulations, and speed of solving technical problems

5- The importance of outsourcing software that meets all aspects of the user needs in particular the final output (including the requirements reports).

4.2.2 With respect to the expert :

Risks resulting from the outsourcing of software development were significant. Based on their experience, large international organizations were concerned with risks of outsourcing software. Therefore, organizations must take risks in account when outsourcing software development. The following points should help in avoiding risks:

1- Emphasis on the organization need for implementing the experience of outsourcing in order to avoid potential risks.

2- Expectations study for advantages and disadvantages of outsourcing software development.

3- Must study the issue of outsourcing software development in a scientific manner before starting in its procurement.

4- Taking in account the loss of experienced programmers and their efficiency due to their sense of marginalization when software development is outsourced.

5- Must study the issue of risks arising from contracts

6- Taking in account the importance of training IT staff

7- Good study and analysis of Organizations internal systems, consideration of business process, determination of the actual needs of the organization, the required output since the beginning of the process, and characterization of good and accurate work before the creation and application of software.

8- Identify business process and job description and seek outside consultancy; if necessary in order to avoid risks arising from the weakness of job description: weakness of the overall system and the weakness of the application.

9- In case of a particular need for the development of software outsourcing. Was the outsourcing through joint system between external and internal sources? is expected to lead to transfer of new knowledge and experiences among programmers and to increase the programmers confidence.

10- Taking in account the difference in salaries between programmers inside and contractors who perform the same work from outside the organization that could lead to frustration, anxiety and dissatisfaction of inside programmers.

11- The need to emphasize the importance of identifying the organization's need following scientific methods in the implementation, and include training, transference of knowledge and experience upon contracting.

12- Encourage and support producing expertise inside companies and opening sources of knowledge and increasing support (physical, academic and logistical).

13- Economic embargo on Sudan caused lack of options when buying software, so the organization should be aware about manufacturers, and establish clear criteria for the necessary software itself, as well as executing companies. Economic blockade also limited the exchange and technical possibilities of the organizations.

14- Sudan was suffering from policy changes and stability on an ongoing basis that lead to need for permanent change and adjustment.

15- Drew the government attention to human cadres at the first place and to the need of providing him with what he needs from the professional knowledge and scientific methods.

16- When outsourcing software must emphasize the involvement of all stakeholders.

17- The importance of the contract was to get the use of the experience houses and consultants not ignoring the important things such as training, maintenance and other.

18- Putting great attention to the dangers arising from the use of external programs such as confidentiality, safety, security and non-possession of the database.

19- There are good local competencies they have to be supported.

20- Encourage the development of local companies that have extra advantage in terms of the lack of a language barrier, culture, and ease of communication, and easy access to technical support and consultancy and flexibility.

21- The adoption of outsourcing software should be preceded by thorough studies of the suitability of the software to all the phases of the application (decision process & implementation process).

22- Put confidence in local product, though it was believed that the foreign product had a better quality and more efficient, and need to combat the negative publicity (local product does not work efficiently and not good at all).

23- Forming partnerships to support the success factors of organizations and exchange of experiences, and the development of financial budgets for

specialized training and proper planning of projects and the use of the best software technologies.

24- In case of the use of the software developer from overseas the enterprise must pay attention to the problem of communication (language and culture).

25- Close monitoring of the system in terms of the stages of the implementation to meet the requirements and to ensure confidentiality and safety of the owner's database.

26- National guidelines for outsourcing to be issued by authorized ministry.