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General Characteristics of Software Development Companies in Sudan and its Impact on Production

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Abstract: This paper aims to study the characteristics of Software Development Companies in Sudan (private companies) in terms of company size, financial ability, and years of experience in the field of Software Development. The researcher also tries to check out the qualifications of the staff involved in the process of Software Development in order to place these Companies among the large Companies working in the same field. To achieve this, a questionnaire was designed and the data collected was statistically analyzed through Statistical Package for Social sciences (SPSS) and the results were discussed and the findings were set accordingly.

Keywords: Software, Companies, Sudan, Quality Production.

I. INTRODUCTION

For most organizations, Companies and increasingly for individuals, software has become an essential element. Software as well as business systems are a key component of telecommunications, defense, transport, and medical systems. Software also plays a strategic role enabling organizations and Companies to meet challenges of flexibility and to reduce costs and to maintain quality. With the growing use of internet and mobile technologies, and embedded software in consumer products, individuals are also more reliant on software; it has become 'woven into the threads of our daily lives. Today, software is an intrinsic part of different commodities such as cars, watches, televisions and many other products used every day.

Due to the growing dependence on software, problems in developing software can have devastating results at all levels: individual; business; community; national and international. Consequently, the improvement of processes associated with Software Development has become a focus for practitioners and researchers alike. As software becomes increasingly important to all aspects of industry, there is a need to encourage practitioners, organizations and Companies to adopt international standards to improve the quality of software products. Software Development is the process of developing software through successive phases in an orderly way. This process includes not only the actual writing of code but also the preparation of requirements and objectives, the design of what is to be coded, and confirmation that what is developed has met objectives.

Development of new systems or products is often carried out by using the experience and intuition of management and technical personnel. It is clear that there are some requirements are to be found in an enterprise or a company that working in the field of Software Development to meet international standards. A good enterprise or company usually:

- Has a financial, organizational, and human resource necessary to manage variety of activities.
- Can maintain software improvement process.
- Can use effectively the past experience with methodologies to foster improvement.
- Can acquire knowledge about best practice adoption through various co-operative strategies with other Companies and institutions experienced in software process improvement.

In this paper, the characteristics of Companies working in Software Development in Sudan will be examined in order to place these Companies among large Companies working in the field of Software Development in terms of company size, age, employees, and software developers, and the financial abilities of these Companies.

II. METHODOLOGY

The utilized methodology in this paper is both descriptive and analytic methods. A survey is considered to be a feasible means of providing data for any study investigating the state of practice. In this case the survey provides the general characteristics of Software Development Companies in Sudan.



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A questionnaire is designed and distributed as a mean of data collection. The sample population of the study has been randomly chosen involving (25) Sudanese Companies working in this field. The collected data are statistically analyzed through (SPSS) and the results have been discussed and conclusions and recommendations are set accordingly.

III. DATA ANALYSIS AND DISCUSSION

In this section, the collected data which has been analyzed through (SPSS) will be discussed to shed light up on the features of the Software Development Companies in Sudan.

A. Company's size

Concerning the Companies' size, two questions are included in the survey. The first one asks about the total number of employees in the company. The second one asked about the number of employees involved in the Software Development. The figure below shows that the majority of the Companies (80%) are from small size with less than 20 employees. The minority of the Companies (20%) are from medium size indicating that Sudan lacks large Software Development Companies or organizations, and this will accordingly affect both of the quantity and quality of software products.

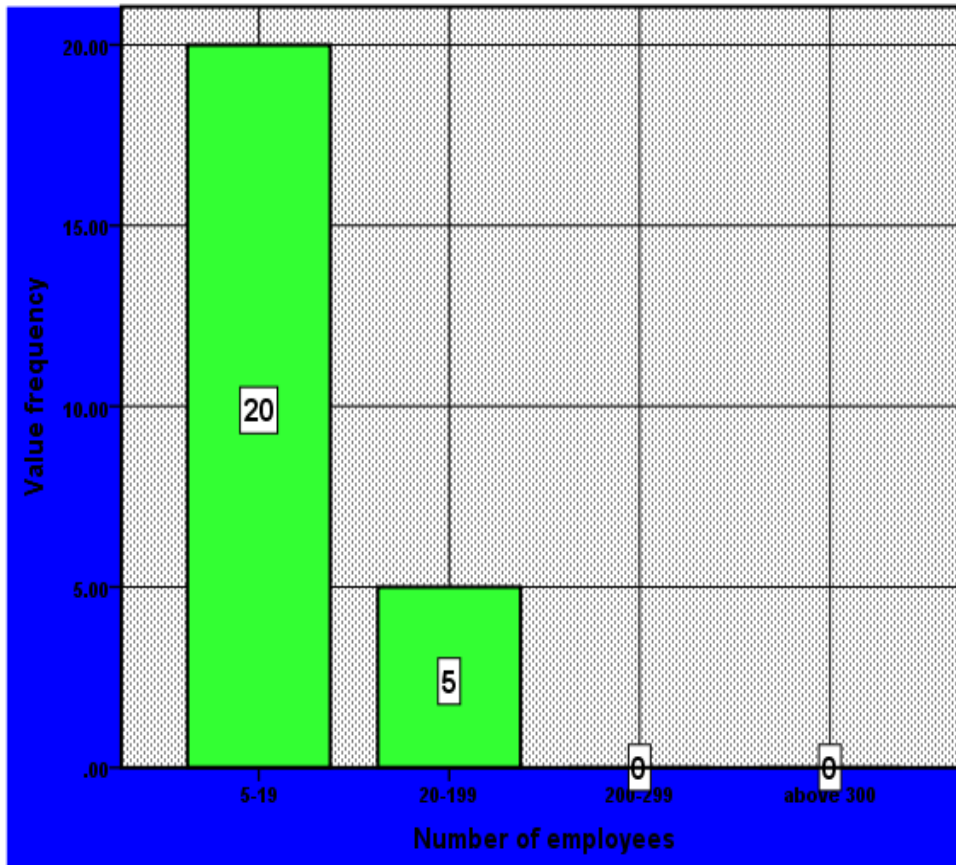


Fig (1): Number of employees in a company

The number of software developers in a company or an organization plays a great role in terms of quality, quantity, and maintenance of the products. Figure (2) below shows the number of software developers employed by Companies in Sudan. As can be seen in figure (2) most of the Software Development Companies in Sudan (64%) are employing less than five software developers and (36%) of the Companies employing 5-9 software developers. This indicates that the majority of the Companies working in the field of Software Development in Sudan do not have the ability to enhance Software Development products compared with international standards.



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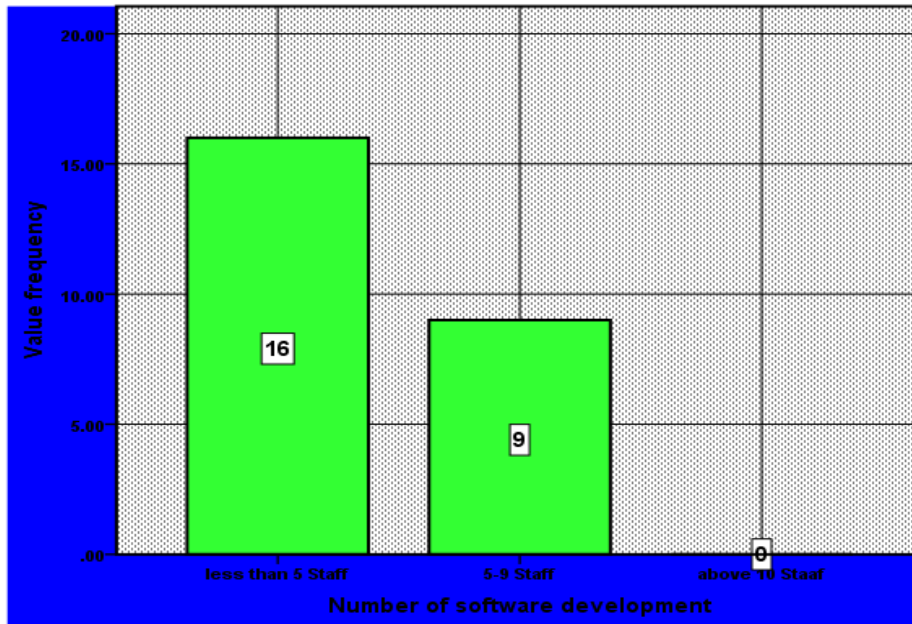


Fig (2): Number of software developers

B. Financial Ability

The establishment of Software Development Company depends basically on financial ability rather than well trained and expert developers. It represents an obstacle that faces the existing and new Software Development Companies in Sudan. Software Development industry in Sudan is extremely classified as private sector, which makes these Companies take all the expenses.

The sum of money needed to establish Software Development Company in Sudan is estimated to be (45000-100000) USD. The following figure shows the financial ability of Software Development Companies in Sudan. Figures (3) below shows that eighteen of the companies (72%) represent the majority of the companies are facing financial problems. Seven of the companies (28%) have good financial ability. This indicates that the majority of Software Development Companies in Sudan are facing financial problems.

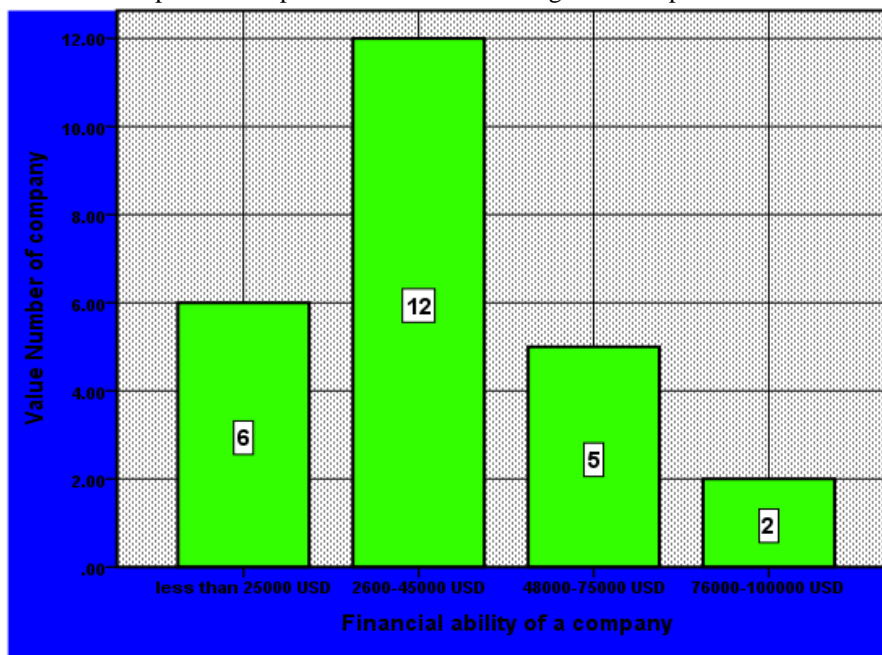


Fig (3): financial ability of a company



C. Age of Companies

In this section, the collected data concerning the age of Companies provides the age of Companies in years which reflects the experience of Companies working in the field of Software Development in Sudan. Figure (4) shows that ten of these Companies are relatively young Companies, less than five years. Nine of the Companies have been working for ten years, and six of the Companies represent the oldest Companies which have been operating for fifteen years. Hence, it is obvious that Software Development in Sudan do not have enough experience to enhance the process of Software Development.

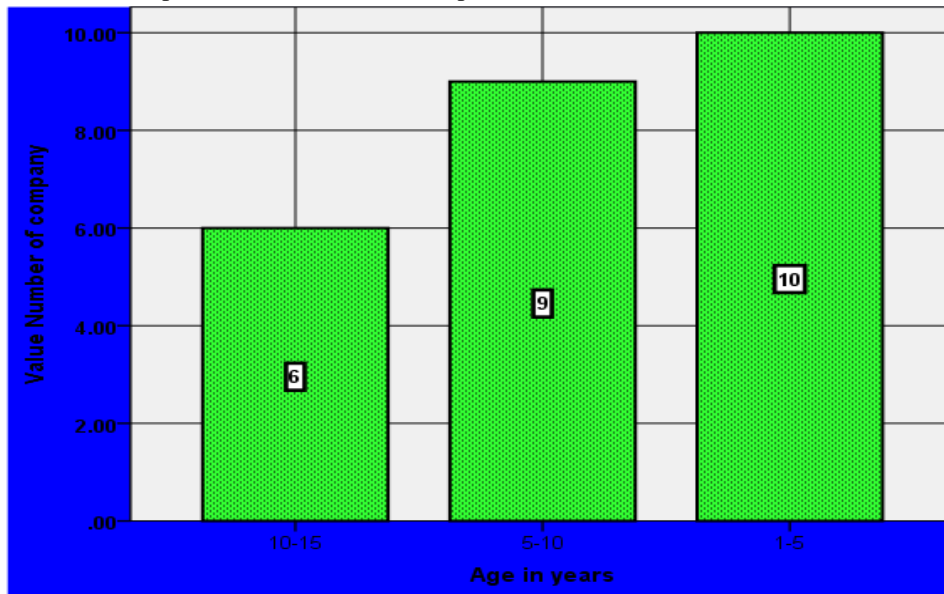


Fig (4): Summary of Age of Companies

D. Proportion of Staff Qualifications:

The level of formal education of staff employed is high. The proportion of staff with post graduate qualifications and the proportion of graduate staff are examined for each company to check out to what extent these companies can improve and maintain the process of Software Development. Figure (5) shows the number of staff with post graduate qualifications in each company.

As can be seen in figure (5) below fifteen companies (60%) don't have any staff with post graduate qualifications. Seven companies (28%) reported that post graduate staff represents less than 26%. Three companies (12%) reported that staff with post graduate qualifications represents 26% to 50%.

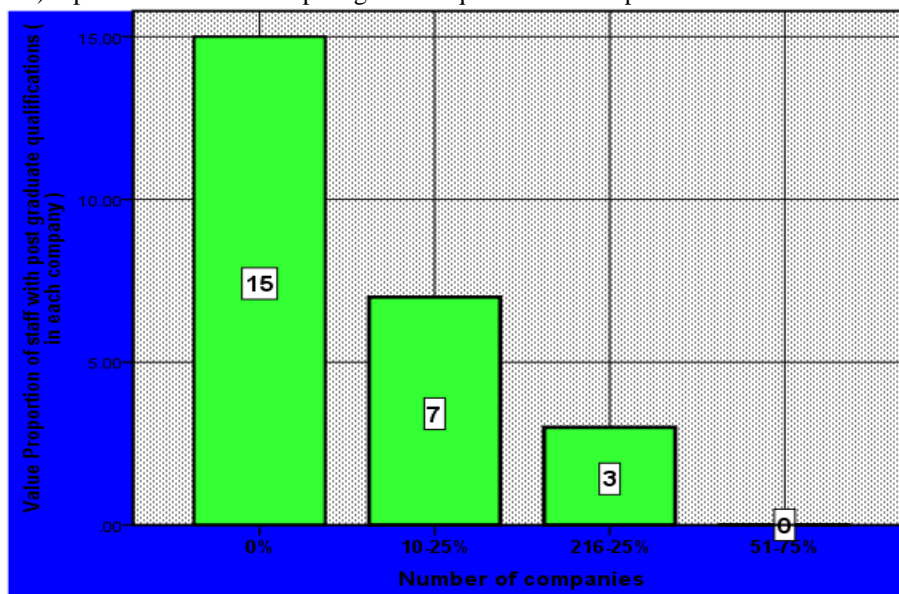


Fig (5): Staff with Post Graduate Qualifications



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The proportion of graduate staff (staff without post graduate qualifications) is quite high. As shown in figure (6) twenty of the companies (80%) have revealed that all of their staff has graduate qualifications. Five of the companies (20%) revealed that some of their staff members don't have university qualifications.

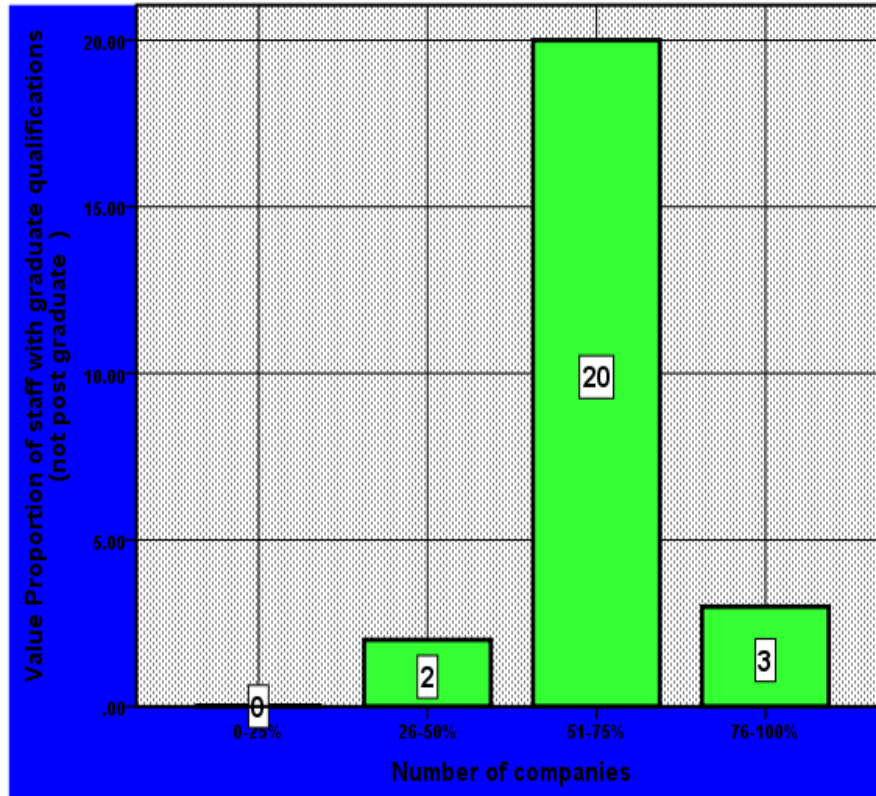


Fig (6): Graduate Qualifications (excluding Post Graduate)

IV. CONCLUSION

The paper has obviously shown that most of Software Development Companies in Sudan are classified to be of small size compared with international Companies. It also has shown that Software Development Companies in Sudan lack financial, organizational, and human resource necessary to manage and improve variety of activities. Software Development Companies in Sudan need to be acquainted with differentiated knowledge about best practice adoption through various co-operative strategies with international Companies and institutions in order to cope with the rapid improvement in the field of Software Development. The paper also has shown that companies should work seriously to increase the company's size as well as financial ability and the number of the staff involved in the development process, in order to improve and enhance the general characteristics of these companies, and to cope with international Companies which will affect best practice adoption and the quality of Software Development products.

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