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# INFORMATION COMMUNICATION TECHNOLOGY MANAGEMENT (ICTM) IN IRAN: SOFTWARE DEVELOPMENT APPROACH

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**ABSTRACT**

Management can defined as science of optimal use from resources and facilities to promote the productivity. The important part of discussions concerning ICT management are related to software development management. Software development (or deployment) principally is more risky compared with other industrial products. According to the Standish Group's chaos report only few software development projects were successful, and many canceled before completion, while others completed but over budget, over schedule, and not meeting original specifications. So the aim of this research is to survey the challenges of computer software developers' companies in country. By literary review, some of the most problem factors in the computer software development published in scientific context were obtained. The research population consists of about 600 computer software developers' companies. 201 questionnaires out of 234, amounting to %86, were returned by project managers. For examining reliability, variables having an acceptable Cranach's alpha of about 0.8. Resulting of two sample tests with significance level greater than 0.05, there is no significant difference between the number of

members of software project teams and variables related to the challenges of documentation qualities, system requirements, programming quality, maintenance, personnel resources and process management. The significant relationship between software project duration and system requirements were observed and the companies that run the projects shorter in duration, having more challenging to requirements. There are more challenges related to the qualities of software programming and maintenance in groups whose members are less experienced. Significant difference between the various methodologies adopted in software development with the above mentioned variables were not observed.

**Keywords: ICTM, Software Development, Iran**

## INTRODUTION

Although there are many definitions for the word of management, but simply the management can defined as science of optimal use from resources and facilities to promote the productivity. Such a definition requires planning and appropriate policies to guide and supervise connected components such as manpower and equipment in keeping with short-term, mid-term and long term goals. On the other hand, influence of information and communication technology (ICT) nowadays in all areas of human life has made a distinguished position for mentioned field in a way that it has been turned into a necessary needful mean rather than amusing thing. There are many factors which increase or decrease use of ICT. Development degree of countries can determine coefficient of ICT influence, for example, budget used in ICT part in Greece is equal to 1.2% of Gross Domestic Product (GDP) in 2005 while it is higher in other developed members of European Union i.e. 3% [7],Cultural beds and ICT acceptance by national culture of countries can accelerate or slow improvement level of business resulting from using ICT in organizations. Communication differential across cultures can, for instance, be partly accounted for by a society's view of nature and technology. It influences people's roles, actions and stances toward one another in complex ways [6].

Also, the specific feature of an economic environment which has enveloped the organization is influential in level of accepting ICT by organization. The important part of discussions concerning ICT management are related to software development management, especially since nowadays software plays a distinguished role in economic development of countries

and are used largely in productive service institutes in order to manage knowledge and for optimal supervision on production, distribution and consumption processes.

On the other hand, systematic and integrated managerial application in software manufacturers has increased efficiency and consequently improvement of all processes. Using ICT changes structure of organization in direction of more efficiency as if structure of organization is assumed as skeleton of body, then management system would be neural system of body by which coordination and supervision on all parts of organization will be applied[10],Therefore, it is unavoidable to scrutinize and examine minutely software industry of Iran and to study challenges and threats of this industry as part of ICT.

As it is observed in figure-1, although software industry has a little share in ICT part of Iran but it is considered as one of the most profitable industries in present world that provides a high added value for producers and investors due to relying on manpower and ability of thinking and lack of focus on physical sources and possessions. [11],The mentioned difference between Iran and developed countries should be studied especially when about 400 pieces of software annually obtain technical license from high council of informatics.

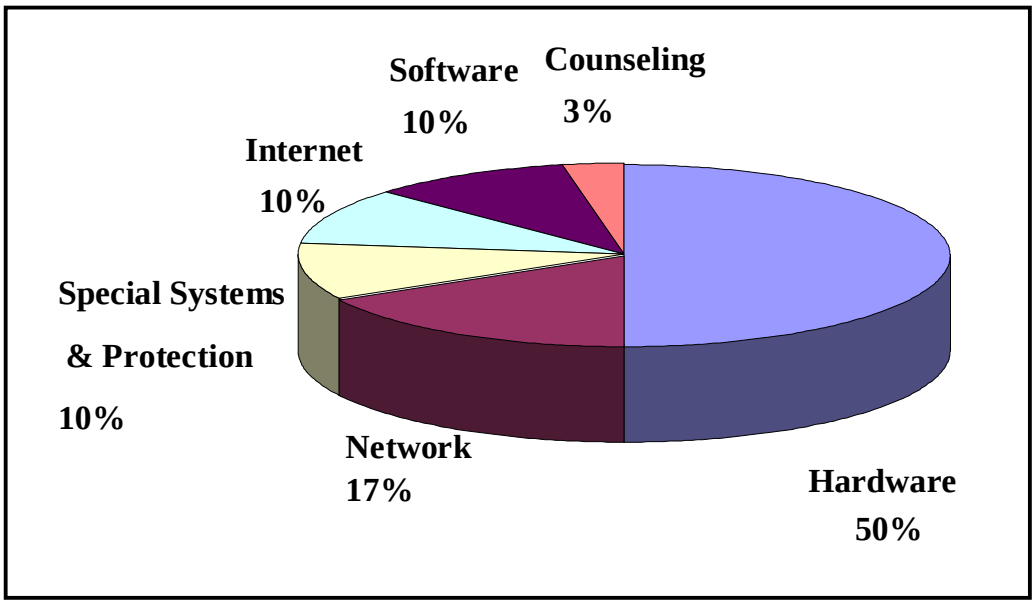


**Figure 1: Market share of each part of national Information Technology in 2004 (High Council of Informatics, 2009)**

Software development (or deployment) principally is more risky compared with other industrial products. According to results by Standish group's chaos report that is well known to Software Crisis, 365 IT managers in 1994 have participated in study

and they reported that only 16% of software development projects have been completed successfully, 53% have been faced with challenges and 31% have been failed. The average cost overrun for a medium- size company surveyed was about 182 percent of the original estimate, while the averaged schedule overrun was about 202 percent. That is, the results of the survey suggest that a medium-size project estimated to cost about $1 million and take a year to develop actually cost about $1.8 million, took just over two years to complete and only included about 65 percent of the envisioned features and functions[8],A similar study in 2000 concerning the field shows that only 28% of software development projects have been completed successfully, 23% have been stopped and 49% have been faced with serious problems [11],Only 29% of software development projects have been completed successfully in 2004 while 53% & 18% has been challenged and failed respectively. Similarly, only 32% of software development projects have been completed successfully in 2009 and 44% & 24% has been challenged and failed respectively [4],Project success depends on suitable timetable of project completion in software development projects and this completion should depend on exact estimation of prime cost and software quality in development process and applying specifications which have been determined and predicted at the beginning of the project. So, challenge means that a completed project imposes more cost and time and lower quality rather than initial expectations due to lack of appropriate planning and policy in time, cost and quality management. The project is regarded as failed if it stops in any phase of software life cycle or if it remains uncompleted [9],Table 1 shows the summary of CHAOS studies from 1994-2009.

**Table 1: summary of CHAOS studies from 1994 to 2009 (percentage)**

| Year | Successful | Challenging | Failure |
|---|---|---|---|
| 1994 | 16 | 53 | 31 |
| 1996 | 27 | 33 | 40 |
| 1998 | 26 | 46 | 28 |
| 2000 | 28 | 49 | 23 |
| 2004 | 29 | 53 | 18 |
| 2006 | 35 | 46 | 19 |
| 2009 | 32 | 44 | 24 |

Principally, several factors should be considered in software development that parts of them are related to software development phases. Circulation of software development starts from requirements phase. Requirements step of system is a condition

or ability in system or its components needed for a user to solve a question or to reach a goal whereby a contract, standard, description or other official documents would be executed. Generally, requirements are divided into two groups; functional and non-functional requirements. Functional requirements explain services which should be provided by system, reaction of system against certain inputs and behavior of system in special conditions. Non-functional or qualitative requirements explain restrictions and limits which should be applied on functional services of system such as temporal limits, limits related to development process and observing standards. Such requirements are used for qualitative promotion of system. Requirements engineering regards the concept of quality in two aspects which first is quality of product i.e. considering all steps of producing and procedures regarding what is produced while the second aspect is quality of process that is observing standards, methodology regarding how the procedures are completed. Requirements engineering provides an appropriate bed to comprehend demands of stakeholders and also it makes arrangement and provides feasibility of such needs, forecasting the facilities, achieving rational strategies, explaining solution clearly and explicitly, evaluating features and managing requirements when they are turned into operational system.

Also, programming is the activity of writing programs for computers (Collin, 2004) and it is an important phase of software development. Each programming language has an especial grammar and syntactic elements; hence, considering type of project and its goal, a suitable programming language should be chosen which leads to software development and using it in software systems. Software systems mean operating system and assistant programs such as translator of a program to a computer language and loading for running. Also, text of each computer program which has been written by a programming language may consists of several or millions lines. This text is called source code. Source code includes items such as definition of variables, commands, functions, loops and other phrases which tell the program how to act. Furthermore, programmers may write comments about parts of a code in source code.

Maintenance is another important phase of software development. All efforts and activities which are executed in line of

software manufacturing and in each phase are promising that after implementation and installation, software should has an ability for a long-term sustainability and matching with changes arisen from environmental conditions which are partly unavoidable. Lack of harmony between software and new conditions makes decline and obsoleteness of software. An outstanding instance is DOS operating system (disk operating system). More challenges associated with maintenance phase of software makes less feasibility of software sustainability. These challenges are influenced by challenges in previous steps of software manufacturing that have extended to step of maintenance. On the other hand, challenges related to phase of maintenance have feedback in other phases of software manufacturing, so, in this manner challenges finally would be decreased or removed. Software life cycle is about mentioned procedures. Hence, it seems that maintenance is one of the main important steps in software life cycle. Some thinkers consider maintenance step so as they divide steps of software life cycle in two main steps: software production and software maintenance. It should be noted that about 66% of expenditures related to software life cycle is allocated to maintenance. (Yip & Lam, 1994 quoted in Chen and Haung, 2009)

**Research Main Questions**

1-What are demographical specifications of project teams' members?

2-Is there a significant relation between demographical specifications including project team members, duration of projects completion, average experience of project team members and used methodology in projects with related variables of computer software development challenges including documentation qualities (DOC), system requirements (SYS), programming quality (PGM), maintenance (MA), personnel resources (PER) and process management (PM)?

**MATERIALS AND METHODS**

Present research which belongs to applied type is an analytical-survey research. It means that computer software development challenges have been studied by analytical-survey method. The questionnaire is also used by five-level Likert scale as a tool to gather information. Items of this questionnaire have been extracted as a result of studying texts and resources related to this branch, Thus, items of initial questionnaire have been produced and compiled in 6 dimensions and 30 items based on the most challenging factors reported by software

developers during 1981 to 2007 and official valid resources have published these challenges in scientific texts. It was formulated as final questionnaire considering opinions and final confirmation by associate professor, assistant professor and software experts, and pilot survey in a society consist of 30 members of working people in valid ICT companies, then the questionnaire was distributed in research society by targeted method.

In other words, Knowledge & Information Science and software engineer masters' opinions have been used in order to obtain questionnaire validity and the questionnaire has been confirmed by experts of this field. Also Cronbach's Alpha Coefficient was used for questionnaire reliability and it was about 0.8. As it is observed in table 2 research variables have acceptable alpha value.

This research statistical society includes all computer software developers who have a valid technical confirmation certificate issued by Informatics Higher Council. Names of these companies have been extracted from website of Informatics Higher Council. First they were separated from other companies and 600 computer software developers were specified. According to Krejcie & Morgan Table of sample size of questionnaire; sample volume consists of 234 companies with ranks 1 to 7 for which questionnaires were sent. 201 questionnaires were filled and returned by project managers of software development team, therefore, about 86% of questioners have been returned. It should be noted that, computer games developers which work under Computer Games National Institute, are not included in this research society. Descriptive statistics and also inferential statistics including analysis of variance were used to analyze data collected by gathered questionnaires.

**RESULTS**

Research results are presented in this part regarding research questions.

1-What are demographical specifications of project teams' members?

**Distribution of responders regarding number of members of project team**

This part of statistical analysis studies on way of statistical sample distribution obtained from computer software development companies regarding variables such as number of members of projects' teams or groups, duration of projects completion, average experience of project teams' members and used methodology in projects.

**Distribution of responders regarding duration of projects completion**

Table 3 of frequency distribution shows status of number of project team member. Among all sample groups, 14 project teams among groups have 1-2 members (7%), 70 project teams have 3-5 members (about 35%), 56 project teams have 6-10 members (about 28%), 35 project groups have 11-20 members (about 17%) and 26 project groups have more than 20 members (about 13%) As it is observed in table 1, the highest frequency belongs to project groups with 3-5 members with 34.8%.

**Distribution of responders regarding average experience of project team members**

Table 4 of frequency distribution shows status of duration of projects completion. Among all sample groups, 40 groups have completed the project less than 6 months (about 20%), 73 groups have completed the project between 6 to 12 months (about 36%), 51 groups have completed the project between 13 to 24 months (about 25%) and 37 groups have completed the project more than 24 months (about 18%). As it is observed in table 2, the highest frequency belongs to groups which have completed the projects between 6 to 12 months with 36.3%.

Table 5 of frequency distribution shows status of average experience of project teams' members. Among sample groups, 1 group members are experienced less than 1 year (about 0.5%), 47 groups members are experienced between 1-3 years (about 23%) 109 groups members are experienced between 4-6 years (about 54%) 10 groups between 7-9 years (about 17%) and 10 groups members are experienced more than 9 years (about 5%) As it is observed in table 3, the highest frequency belongs to groups in which members are experienced 4-6 years with 54.2%.

Table 6 of frequency distribution shows status of used methodology of project in software development. 4 projects used SPI methodology (2%), 45 projects used Agile methodology (about 22%), 66 projects used RUP (about 32%) and 63 projects used other methodologies (about 31%). Also no methodology has been used by 23 projects. As it is observed in table 4, the highest frequency in used methodology in software development belongs to RUP methodology with 32.8%.

Table 7 shows descriptive statistical indices such as mean and standard deviation for all the questionnaire questions and research variables.

That shows challenges mean in software development projects is relatively in average level and less than average.

**Distribution of responders regarding used methodology in software development:**

**Table 2 Cronbach's Alpha Coefficients for Research Variables**

| Variables | Cronbach's Alpha |
|---|---|
| Challenges as for documentation quality | 0.861 |
| Challenges as for system requirement | 0.811 |
| Challenges as for programming quality | 0.755 |
| Challenges as for maintenance | 0.823 |
| Challenges as for personnel resources | 0.741 |
| Challenges as for process management | 0.799 |

**Table 3: Distribution of responders regarding number of project members**

| Number of Members of Project | Frequency | Frequency Percentage |
|---|---|---|
| 1-2 | 14 | 7 |
| 3-5 | 70 | 34.8 |
| 6-10 | 56 | 27.9 |
| 11-20 | 35 | 17.4 |
| More than 20 | 26 | 12.9 |
| Total | 201 | 100 |

**Table 4: Distribution of responders regarding duration of projects completion**

| Duration of Projects Completion | Frequency | Frequency Percentage |
|---|---|---|
| Less than 6 months | 40 | 19.9 |
| 6-12 months | 73 | 36.3 |
| 13-24 months | 51 | 25.4 |
| More than 24 months | 37 | 18.4 |
| Total | 201 | 100 |

**Table 5:Distribution of responders regarding average experience of project groups members**

| Average Experience of Team Members | Frequency | Frequency Percentage |
|---|---|---|
| Less than 1 year | 1 | 0.5 |
| 1-3 | 47 | 23.4 |
| 4-6 | 109 | 54.2 |
| 7-9 | 34 | 16.9 |
| More than 9 | 10 | 5 |
| Total | 201 | 100 |

**Table 6: Distribution of responders regarding used methodology in software development**

| Used Methodology | Frequency | Frequency Percentage |
|---|---|---|
| SPI models | 4 | 2 |
| Agile | 45 | 22.4 |
| RUP | 66 | 32.8 |
| Other | 63 | 31.4 |
| No methodology | 23 | 11.4 |
| Total | 201 | 100 |

**Table 7 - Descriptive Statistical of Questionnaire Questions**

| Indices | Challenges | Mean | Standard Deviation |
|---|---|---|---|
| 1.The project has been documented unreliably or obscurely | DOC | 3.21 | 1.107 |
| 2.There has been no documentation or they have been incomplete | | 3.26 | 1.134 |
| 3.Tracking previous documentation in project is hard concerning design specification & users' requirements | | 3.30 | 1.078 |
| 4-Changes have not been documented completely | | 3.62 | 0.983 |
| 5-Documentation are not consistent and comprehensive | | 3.38 | 1.018 |
| 6-System requirements have been recognized mistakenly | SYS | 2.85 | 1.192 |
| 7- System requirements have been recognized incomplete or obscure | | 3.24 | 1.097 |
| 8- System requirements have been recognized unreal or conflict | | 2.50 | 1.082 |
| 9-Software quality requirements | | 2.89 | 1.101 |
| 10- System requirements are changed constantly | | 3.57 | 1.108 |
| 11-It is not conforming to programming standards | PGM | 2.56 | 1.048 |
| 12-Comments are incomplete in relation to source code | | 3.25 | 1.127 |
| 13-Various modules are not allocated in program in a way that they be independent to each other concerning functionality and operating | | 2.75 | 1.105 |
| 14-The program is very complicated and restructuring is not possible | | 2.98 | 1.153 |
| 15- Inappropriate use of programming technique decreased ability of source code Comprehension | | 2.80 | 1.044 |
| 16-Submitted software systems are not comprehendible and analyzable easily | MA | 2.76 | 1.001 |
| 17- Submitted software systems are not changeable and optimizable easily | | 2.87 | 1.041 |
| 18- Submitted software systems are not sustainable and resistible against unexpected effects arisen from changes | | 2.82 | 0.979 |
| 19- Submitted software systems are not testable easily | | 2.73 | 1.104 |
| 20-Overally, submitted software systems are not maintainable easily | | 2.68 | 1.019 |
| 21-Frequent replacements happen in project team | PER | 2.99 | 1.170 |
| 22-Members of project team are not experienced or skilled sufficiently | | 2.78 | 1.046 |
| 23- Members of project team have not passed appropriate educations | | 3 | 1.077 |
| 24- Members of project team are not able to manage human resources & time | | 3.05 | 1.226 |
| 25- Members of project team are not obligated toward the project | | 2.56 | 1.139 |
| 26-There isn't managerial support and policies in software development process | PM | 3.06 | 1.221 |
| 27-Project planning and control are not effective | | 3.01 | 1.065 |
| 28-There is no proper estimation of project execution schedule & cost | | 3.35 | 1.044 |
| 29-It is not effective to control changes in configuration management software | | 2.95 | 1.081 |
| 30- Quality control verifications are not effective to be sure from qualitative level | | 3.25 | 1.019 |

**Table 8 – Descriptive statistic of research variables**

| Indices | Mean | Standard deviation |
|---|---|---|
| **Challenges concerning documentation quality** | **3.3552** | 0.85451 |
| **Challenges concerning system requirement** | **3.0080** | 0.84305 |
| **Challenges concerning programming quality** | **2.8687** | 0.77889 |
| **Challenges concerning software maintenance** | **2.7721** | 0.78818 |
| **Challenges concerning personnel resources** | **2.8756** | 0.79464 |
| **Challenges concerning process management** | **3.1264** | 0.81003 |

Also as it is observed in table 8 that mean of all challenges (documentation quality, system requirement, programming quality, maintenance, personnel resources and process management) is in range of 2.71 and 3.35.

2-Is there a significant relation between demographical specifications including project team members, duration of projects completion, average experience of project team members and used methodology in projects with related variables of computer software development challenges including documentation qualities (DOC), system requirements (SYS), programming quality (PGM), maintenance (MA), personnel resources (PER) and process management (PM)?

**Comparing average of research variables regarding number of project team members:**

**Table 9: Results of mean test of two societies regarding number of project team members**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| **Significance Level** | **0.397** | **0.819** | **0.573** | **0.093** | **0.339** | **0.828** |

According to table 9 and analysis of performed variance; it can be said that computer software challenges in groups with various members have no significant difference. Level of significant difference is determined by significance value. If the significant value will be more than 0.05, null hypothesis is accepted i.e. means are equal.

**Table 10: Research variables mean regarding number of project team members**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| **1-2** | **3.6143** | **2.9000** | **2.9857** | **2.9714** | **2.6000** | **3.2286** |
| **3-5** | **3.4657** | **3.0000** | **2.7571** | **2.9286** | **2.7886** | **3.0686** |
| **6-10** | **3.2500** | **3.0679** | **2.9714** | **2.6679** | **2.9071** | **3.1071** |
| **11-20** | **3.2343** | **3.0800** | **2.9143** | **2.5314** | **2.9714** | **3.1200** |
| **More than 20** | **3.3077** | **2.8615** | **2.8231** | **2.7923** | **3.0615** | **3.2769** |

Table 10 shows variables mean regarding number of various members of project team in software development. As it is observed, challenges concerning computer software development are rather equal in different projects with various members' quantity participating in software development.

**Comparing mean of research variables based on period of projects completion:**

**Table 11 : Results of mean test of two societies regarding period of project completion**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| Significance Level | 0.550 | 0.46 | 0.652 | 0.656 | 0.993 | 0.489 |

According to table 11 and analysis of performed variance; it can be said that, only challenges related to system requirement in groups with different period of completion has significant difference among challenges of computer software development, but other challenges in groups with different period of completion have no significant difference.

**Table 12: Research variables mean regarding number of period of project completion**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| Less than 6 months | 3.5200 | 3,200 | 2.9550 | 2.8550 | 2.8750 | 3.1100 |
| 6-12 months | 3.2959 | 3.0904 | 2.9123 | 2.8055 | 2.8795 | 3.2301 |
| 13-24 months | 3.2941 | 2.9647 | 2.8157 | 2.6588 | 2.8941 | 3.0941 |
| More than 24 months | 3.3784 | 2.6973 | 2.7622 | 2.7730 | 2.8432 | 2.9838 |

Table 12 shows variable mean regarding period of projects completion in various times. Challenges related to system requirements are more in groups in which projects have been done less than 6 months. Generally, shorter period of projects completion leads to more challenges in system requirements challenge.

**Comparing mean of research variables based on experience of projects team members**:

**Table 13: Results of mean test of two societies regarding average experience of project team members**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| Significance Level | 0.320 | 0.104 | 0.008 | 0.049 | 0.260 | 0.056 |

According to table 13 and analysis of performed variance; it can be said that, challenges related to programming quality and maintenance in groups with different average experience of members have significant relation among challenges of computer software development, but other challenges in groups with average experience of members have no significant difference.

**Table 14: Research variables mean regarding average experience of project team members**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| Less than 1 year | 3.8000 | 3.2000 | 3.6000 | 2.0000 | 2.2000 | 3.4000 |
| 1-3 years | 3.5787 | 3.2723 | 3.2170 | 2.9830 | 3.0213 | 3.3872 |
| 4-6 years | 3.2734 | 2.9248 | 2.7706 | 2.7541 | 2.8220 | 3.0037 |
| 7-9 years | 3.3176 | 3.0118 | 2.7294 | 2.4941 | 2.9706 | 3.2294 |
| More than 9 years | 3.3800 | 2.6400 | 2.7000 | 3.0000 | 2.5200 | 2.8600 |

Table 14 shows variables regarding average experience of project teams' member. Challenges related to programming quality are more in team with less experienced members. In other words, less experienced members in project team leads more challenge in programming quality. So, using more experienced member in software project teams can lead to make software with better quality and maintainability.

**Comparing mean of research variables based on used methodology in software development:**

**Table 15: Results of mean test of two societies regarding used methodology in software development**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| Significance Level | 0.510 | 0.425 | 0.821 | 0.267 | 0.657 | 0.208 |

Comparing research variables mean regarding used methodology according to table 15 and analysis of performed variance; it can be said that, challenges concerning computer software development in various projects with different methodology have no significant difference.

**Table 16: Research changes mean regarding mean of used methodology in software development**

| Research Variables | DOC | SYS | PGM | MA | PER | PM |
|---|---|---|---|---|---|---|
| No use | 3.6348 | 3.2174 | 2.9826 | 3.0783 | 2.9739 | 3.3652 |
| SPI Models | 3.4000 | 3.1000 | 2.5500 | 3.1500 | 2.7500 | 2.6000 |
| Agile | 3.3867 | 2.9333 | 2.8844 | 2.7600 | 2.8489 | 2.9778 |
| RUP | 3.2697 | 3.0970 | 2.8152 | 2.7030 | 2.9667 | 3.1000 |
| Other | 3.3175 | 2.8857 | 2.8921 | 2.7175 | 2.7714 | 3.2063 |

Table 16 shows variables mean regarding different methodologies used in software development. Computer software development challenges are relatively equal with different methodologies in various projects of software development.

As it is observed, some challenges concerning computer software development including challenges of system requirement and also programming quality and maintenance have significant relations respectively with variables of demographical specifications including period of projects completion and average experience of project group members.

But they don't have significant relations with other variables of demographical specifications including number of group members and used methodology in projects. Therefore, it is recommended to computer software developers companies to ask more time when they conclude contract with employers in order to remove and/or decrease challenges of computer software development for software projects completion. Also, they should use experienced experts and programmers in order to promote programming quality in computer software development. It leads to increase maintainability of software.

**CONCLUSION**

Considering demographical features, the most frequency of project group members belongs to groups with 3 to 5 members (34%). Also, most of computer software projects have been completed by groups within 6 to 12 months (36.3%). More than half of software developer groups have finished projects within 4 to 6 years (54%) meanwhile in majority cases; software developer groups have used RUP methodology in software development (32.8%). According to research findings and regarding the relation between each demographical variable with challenges of software development; the most important challenge for software developer companies is concerned with experience and proficiency of project group members and their expertise and ability is so related to programming quality. More experience and skill of project group members lead to better observing of programming standards and this fact goes to appropriate classification of modules and decrease of program complication and feasibility of restructuring. Also, appropriate use of programming techniques increases ability of source code comprehension and provides more completed explanations. It should be noted there is no significant relation between experiences of project group members with other challenges related to software. Also, on the basis of such findings, there is a significant relation between period of project completion with challenges of system requirements and more time of project completion provides feasibility of correct complete and clear recognition corresponded to realities of system requirements. Also, recognition and supervision on continuous changes of system requirement will be more feasible and it causes more regard to requirements linked to software quality.

One task of Iranian high council of informatics is to determine computer policies and politics in order to solve problems and movement of present status to achieve a good system of national computer[1],Results of research narrate that studying of human power indices is necessary in order to better management of software systems and optimal use from resources and facilities that leads to efficiency promotion. Due to high reliance of companies on specialties and skills of human power and difference of such skills in project group members, it is suggested to software developer companies with participation of high council of informatics and/or guild system organization to hold educational classes and workshops in order to achieve experiences related to specialties and occupational skills, because in this manner, group members of software development promote quality of production software by gaining more experience and they better forecast required time of project completion. According to findings the most impediments that computer software developers are faced across the country related to challenges of system requirement and also programming quality and maintenance respectively with variables of demographical specifications including period of projects completion and average experience of project group members.

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