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Cultural Influence On Requirement Engineering Process And Practices; A Pakistani Perspective

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Abstract—Requirement Engineering (RE) is known as the most important phase of the software development life cycle. The aim of RE is to instruct, elaborate and discuss the procedure of detecting and documenting the needs and requirements of the stakeholder. It is possible that stakeholder might be strongly influenced by their culture values as it has an impact that what we have in our minds are the seeds of cultural fields. Culture difference has a unique influence on individual's perceptions and overall personality. The differences are not limited to the way how they communicate, collaborate or visualizing. Every particular culture has a significant amount of impacts on individuals, it depends how it address a problem, how it works and how they see things therefore it is very possible that the difference of a culture which leads to the difference of a society where norms and values are totally changed, these factors can have a great impacts on the software development teams which can cause the possibility of a threat in software development. The RE has a significant impact on the quality of the software and it is very important to have an interpersonal communication between requirement engineers and stakeholders in order to refine the requirements and do the work tightly. This study is focusing and investigating the Pakistani core cultural dimension which affects the RE activities in the context of software development. The dominant model for this study is Hofstede cultural Model. For data collection technique the questionnaire method is used, where from 217 software houses data is collected and manipulated. Boxplot is use to perform statistical calculation to interpret the result of different dimensions of the culture. Research has shown the additional influence on RE activities then Hofstede Cultural model.

Index Terms— Requirement Engineering; Software Engineering; Software Development Process; Cultural Aspects.

1. INTRODUCTION

The Requirement Engineering (RE) refers to the most important phase of the software development cycle. RE elaborates the procedure of eliciting and documenting the stakeholders' needs. For the first time, it was introduced in western world and then later start attracting people from the rest of the world, belonging from different cultures. The RE has a huge impact on the quality of the software, thus it's significant to have an actual communication between requirement engineers and stakeholders in order to refine the requirements and get things done accordingly [1] . RE purpose is to collaborate and get the exact visuals of the user's mind in order to full fill his/her requirements. But it is possible that the user might be effected

by his/her Culture[2]. What comes to mind when we hear the word "**culture**". There are many social scientists who have described the word culture. One of the great social psychologists Geert Hofstede describes culture as the "collective programing of the mind which differentiate members of one group from another" [1]. Hofstede culture model will be taken as background approach for this study. As he is one of the most influential Dutch social psychologist and his work on culture is closely related to the Software Engineering (SE). Author's work has been recorded in more than 50 countries [3]. Hofstede work considers as the top source for such a study and it is commonly recognized and accepted in software engineering culture studies. This study focuses on the impact of Pakistani culture on the practices of the RE process. It has been decided to use explanatory approach towards research and analyze the data, based on quality and quantity. Questionnaire was used for data collection from 217 software practitioners. The result of the present research study might be beneficial for enhancing the RE processes, and practices in Pakistani culture and any culture, which has similar domestic cultural sketches.

1.2 Problem statement

The main persistence of RE is to cooperate and get the particular requirements of the product. This work is investigating the core cultural dimensions which affect the RE activities in the context of software development life cycle within Pakistani Culture, in the Light of Hofstede Culture Model.

1.3 Research questions and hypothesis

To analyze the impact of cultural on RE activities in the perspective of Pakistani culture. The following research questions are presented.

RQ1: What is the impact of Power Distance Index on requirement engineering process and practices in Pakistani culture?

RQ2: What is the impact of Collectivism VS Individualism on requirement engineering process and practices in Pakistani culture?

RQ3: What is the impact of Uncertainty Avoidness Index on requirement engineering process and practices in Pakistani culture?

RQ4: What is the impact of Masculinity VS Femininity on requirement engineering process and practices in Pakistani culture?

H0: If null hypothesis is rejected then alternate hypothesis will be accepted.

H1: If alternate hypothesis is rejected then null hypothesis will be accepted.

1.4 Research Objectives

The objectives of the research is to study the effect of Pakistani National culture in the light of Hofstede Culture Model in the context of requirements engineering stages and practice:

1. To investigate the impact of Power distance index.
2. To determine the impact of Individualism / Collectivism.
3. To investigate the impact of Uncertainty avoidness index.

4. To determine the impact of Masculinity VS Femininity.

1.5 Research Significance

This research work will be useful in the domain of software engineering to improve the RE process and practices in Pakistani culture and any culture that has similar culture profile. Requirements Engineering (RE) requires thoughtful communication among the requirements engineers and software stakeholders. Stakeholder's culture might affect both the RE process and the results. Research shows that there is huge culture effect on RE process and practices in other countries such as Saudi Arabia which might lead serious issues in software development [1].

This research provides a base to identify and avoid these culture influences in order to improve RE processes and practices in Pakistani software houses either government or private sectors.

1.6 Paper Organization

This paper comprised of five sections. Section one includes introduction. Section two explains the literature review of this work. Section three discusses the methodology of the research work. Section four defines implementation with complete stages and results of the research work. Section five contains conclusion.

2. LITERATURE REVIEW

Several social psychologist propose theoretical framework to analyze cultural aspects. Their theoretical frameworks show the fundamental feature of the culture that used to distinguish one culture form another. However, Systematic literature review and form our best knowledge our efforts are the first one to expose the culture influence on RE processes and practices in the context of Pakistan.

In the stage of RE software engineers and software stakeholders need to have continues communication in order to gather and analyze the requirements [1]. The relevant culture can have a significant amount of impact on the way they interact and collaborate with each other. Thus it is very likely that cultural background will influence RE activities to a significant extent. For this purpose, Tawfeeq Alsanoos [2] used one of the most common and inclusive cultural studies in field SE known as Hofstede's cultural model.

According to this model, there are 6 cultural dimensions that includes Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), Uncertainty Avoidance Index (UAI), Long term Orientation (LTO) and Indulgence (IND). Author conducted interviews with 32 software practitioners from two culturally different societies. These societies include Saudi Arabia and Australia. His finding suggests that PDI notably affect RE collaboration among different software stakeholders. Moreover, the outcomes that he presented in his work was to spread the awareness of the impact of PDI, and so, it has the potential to enhance collaboration in the domain of RE [3].

Culture differences influence the individual way of communication and collaboration. Every culture possess particular style to share their necessities, and addressing the problem. Therefore culture or norm and values of the society and social factors can affect software development group cooperation and raise the possibility of threats. Many articles show that in Global Software Development (GSD) most software developers associated with typical difficulties such as culture and culture differences. As an outcome,

cultural variances rise the need to realize the impact of culture for superior communication and cooperation in distributed teams [4] .

On the behalf of Chinese Values Survey (CVS) research Hofstede add new dimension on the name of Long- versus Short-Term Orientation (LTO). The writers tried to reproduce this dimension by examining World Values Survey (WVS) substances that appeared to capture the impression of LTO. Their feature analysis of 10 such items across 38 countries resulted in two factors. He's factor resulted in two aspects. The one aspect was strongly associated with the original LTO while the second aspects look like Hofstede's individualism dimension. The first aspect insignificant network was undistinguishable to that of the CVS-based LTO: It predicted domestic economic progress and local school victory in calculation. These results demonstrate that a dimension very related to the original LTO can be inherit from the WVS and that Chinese and Western exploration gadgets can produce similar dimensions of culture [5] .

The asset of information security within countries and organizations depend and determined by the information security; culture of the people. This fact of human culture's factor of information security plays a significant role in securing information assets. It is a fact that national culture has an influence on organizational culture and therefore it is important to consider it for enhancing information security culture in organizations, frameworks for information security culture and the influence of national culture on the organizational culture [6].
Software has the ability to influence people's lives in many aspects and hence it needs to reflect their values. However most of the existed software engineering methods fail to account the human values, which may result in breaching those values in software and user's dissatisfaction or the loss of profit and effected the reputation of an organization. In order to avoid such negative consequences, human's values need to be integrated - in a verifiable way into the software [7].

In the present information based economy, the vast majority of the information sharing examinations have explored the impacts of social qualities at the public level. In any case, singular convictions and practices may likewise be affected and altered by individual social qualities. To comprehend the impacts of social qualities, social impacts at both the individual and nation levels should to be thought of. This investigation is to examine the integrative impacts of the person's and nation's social values on information sharing. We look at persuasive components influencing information sharing expectations dependent on social trade hypothesis and join independence/community and vulnerability shirking as arbitrators. On the premise of a study of 394 representatives directed in the US and China, the results show that prizes are altogether identified with information sharing expectations for Chinese representatives however not for American workers. Correspondence and information self-viability altogether sway information sharing goals in the two nations. Our outcomes additionally show that the person's and nation's social values assume significant parts in information sharing. In the US, independence/community is found to direct the connection among remunerations and information sharing goals. In China, independence/community is found to moderate the connection among notoriety and information sharing goals, while vulnerability evasion is found to direct the connection between information self-adequacy and information sharing expectations [8].

For detecting users' requirements the RE process is essential in terms to make sure the success of the software development process. The RE process are technical and social activity, thus an individuals' culture might influence its activities deeply. The purpose of research is to perceive and determine the impact of culture on the RE process. In Australia and Saudi Arabia, 16 interviews with requirements

engineer practitioners conducted. Result describe that both cultures have an influence on the RE process. This work defines the lessons learned from practice on how to enhanced RE practices, in cultural aspects [9].

Abrupt changes in new technological innovation demands all organizations to promote a culture which enhances organizational performance in the modern global competition. This study claims to find out the organizational culture in the software industry in Pakistan. The results manifest that organizational culture strongly advocates the organizational performance. Some of many factors which are crucial for performance and innovation are flexibility and organizational culture. This study finds out the cultural impact of innovation and performance in a particular sector of industry where performance is critical to measure in competitive environment [10].

In these days, software development has become a global trend in both developing and develop countries. The failure of Global Software Development GSD project is just because of geological, temporal, sociological and organizational problems. Being the first step of SDLC, requirement engineering is the most important due to its failure project fails. Due to global software development requirement engineering is difficult because of cultural and geological variations [11]. The summary of literature review shows in table 1.1.

Table 1.1 Literature review summary

Author name	**Paper name**	**Year of published**	**Problem addressed**	**Solution**	**Methodology**	**Limitations**
T. Alsanoosy	Cultural Influences on Requireme	2018	Explore Cultural Influences on Requirements	This study investigates the impact of the Saudi national culture on the practice of	Qualitative approach	Stakeholder influenced by their culture during requir

	nts En gin eer ing Pr oc ess in the Co nte xt of Sa udi Ar abi a,		Eng inee ring	RE process		ement engin eerin g proce ss and practi ces
T. Als an o os y	Th e inf lue nc e of po we r dis tan ce on req uir em ent s en gin eer ing act	2 0 1 9	Exp lore The infl uen ce of PDI on RE	findings demonst rated that the level of PD significa ntly affects RE collabor ation among software stakehol ders. Author discuss the main identifie d PD cultural Aspects as well	A qualita tive researc h metho dology used toward s researc h	Impa ct of powe r distan ce index on RE activi ties in the conte xt of softw are devel opme nt life cycle

	ivities,			as the ways in which to overcome theme.		
C. V. Monteiro,	The innovative behavior of software engineers	2016	Explore the innovative behavior of software engineers	Individual innovative behavior is influenced by individual attitudes and also by situational factors such as relationships in the workplace, organizational characteristics, and project type.	Author conducted a pilot case study in a Canadian software company using interviews and observations as data collection techniques. Using qualitative analysis,	innovative behavior is dependent on individual

i. BACKGROUND AND MOTIVATION

2.1 Requirements Engineering Process

RE process must be accomplish to discover quality and necessary requirement for software development [12]. The aim of the RE process is to collect clear, enough, consistent, editable and accurate requirements in order to produce quality software. There are four phases in RE Process. Requirements gathering and development, Requirements documentation, requirements validation and validation and requirements management [13]. Every phase explained in detail in below section.

2.2 Requirements gathering and development

To collect requirements from different perspective stakeholder must be define which include user, costumer, constraints, environment and standards etc. This phase emphasizing to collect business requirements, user needs, security requirements and standards by observing or by interviewing stakeholder [14].

Requirements Analysis: Activity perform in this stage is to analyze collected requirement. After gathering requirements, the analysis of these requirement is critical and conflicting in terms to meet business requirements [12]. Some of the requirements analysis activities include communication, prioritization, and negotiation. Before moving to the next phase, requirements identification, traceability, and validation must be considered in this stage.

2.3 Documentation of Requirements.

Once requirements together for the system, it is being documented which is a description of action of the software system. Requirement's documentation consists of two main steps, which are the identification of requirement and requirement specification. Requirements Identification: in this phase a unique identifier assigned to every requirement. In software development process these identifiers are used to identify a requirement in software development process.

Requirement Specification: After successful identification of requirements, the requirements specification document will be available. This documents focus on software product to be delivered [15]. Requirements specification describe the behavior of the product that also aid in reducing development cost, availability, operation speed, security, maintainability and recovery are some attributes that evaluate the requirements specification [16].

2.4. Requirement Verification & Validation

To evaluate the requirements that are stated in the requirements specification by different group of people, is the process of validation while verification is the process of determining whether or not software meet requirements specification such kind of activity perform by providing raw requirements against the system requirements and ensuring the accuracy of the documents. Various methods are used to validate requirements, but the most common methods used are prototyping and reviewing requirements with stakeholders [17].

2.5. Requirement Management and Planning

Because of the iterative process, requirement management must be implemented from the foundation to completion and maintenance of the product. It is important to introduce change management, because requirement are bound to change in the processes. Therefore the focus of this phase is to manage the changes occur in requirements during RE process [18]. Because of reviewing and adopting a change to requirement will bring high cost and redevelopment work hence requirement management is the challenging phase of SDLC [12].

2.6 Hofstede Culture Model in the Context of Pakistan

Hofstede culture model is a cross cultural framework for communication developed by Geert Hofstede. This framework is used to show the impact of a culture of a society on the value of the society's members

as well as how these values related to behavior. It uses a structure taken from factor analysis. Between 1967 and 1973, the original model was developed by Hofstede as a outcome of expending factor analysis to analyze the effects of a worldwide study of employee values by IBM [3].

This culture model offers six aspects to describe the national culture:

• Power Distance Index (PDI): The power distance index which is defined as "the degree to which the less powerful members of organizations and institutions expect and agree that power is not distributed equally." Followers perceives inequality in this model. When hierarchy is clearly executed and established in society, it shows a higher degree of the Index without reason or doubt. A lower degree of the Index indicates that members of the society ask the authority and attempt to distribute power equally. It forces hierarchy and relationships in the family as well as in organizational contexts.

• Individualism vs. Collectivism (IDV) Index: It in each culture indicates the relationships individuals have. This index discovers the "extent to which members or the society are integrated into groups. Individuals look after themselves and their immediate family only in individualistic societies. They stress the "we" versus the "I". On the other hand, individuals belong to groups that look after them for loyalty in collectivistic cultures. Society in which strongly-integrated relationships connects extended families and others into in-groups is said to be Collectivism society. These in-groups are connected with undoubted loyalty and support each other once a conflict arises with another in-group.

• Masculinity vs. femininity (MAS): “A society where preference given for heroism, achievement, material rewards for success and assertiveness.” On the other hand, its counterpart shows "a preference for modesty, cooperation, caring for weak members of the society and quality of life". Different values are displayed by women in the respective society. In feminine societies, they share caring and modest views equaled with men. In societies which are more masculine, women are somewhat competitive and assertive, but as much as men are. In other words, there is still a gap between men and women standards. In high masculine societies this dimension is frequently viewed as taboo. Caring for other and quality of life are in feminine countries while Achievements and success are the dominant attribute of the masculine society.

• Uncertainty Avoidance Index (UAI): This dimension evaluates the degree to which a society is unwilling to ambiguity and unstructured circumstances. Where people accept or avoid an event of somewhat that is not expected. Societies with high index select for guidelines, stiff codes of behavior, law and rely on absolute reality. They believe one lone truth commands everything. When more acceptance of differing ideas or thoughts it indicates lower degree in this index.

• Long-term vs. Short-term Time Orientation (LTO): These two approaches totally concerned with peoples preferences about their present or future. LTO oriented peoples are more practical and have strong affiliations and importance for future. On the other hand, in short term oriented society, peoples focus on the present and uncertain about any social changes in society.

• Indulgence vs. Restraint (IDG): Indulgence and Restraint both measure how people express their desire and wishes. An indulgent (IDG) society, peoples are comparatively more free to enjoy their natural needs and gratify them. In Restraint society, strict norms and regulations control people's gratification of needs and does not allow them to be free [19].

3. research methodology

Hofstede Culture Model was taken as background approach for this study. So that the results of our research has been compared with this Model to see the evidence of the impact of the Culture on RE activities and practices in the context of Pakistani National Culture.

Hofstede is one of the most influential Dutch social psychologist and his work has been recorded in more than 50 countries[20]. His work on cultures is considered as the top source for such a study and it is commonly recognized and accepted in software engineering culture studies. This study focuses on the impact of Pakistani culture on the practice of the Requirement engineering process. It has been obvious to used explanatory approach towards research and the data were analyzed based on quality and quantity.

This study has been conducted in the following steps: research questions and study design in the first step. Then questionnaire were developed for data collection. Next, data has been collected from different software houses from all over Pakistan using Google Form and impersonally. Lastly, the data analysis techniques were used on data in term to get some basic characteristics and features which were used as measurement and comparison parameter with Hofstede Culture Model dimensions. The result of this study might be beneficial for enhancing the Requirement engineering process in Pakistani culture and any other culture, which has similar domestic cultural sketches. Our Proposed Research methodology was conducted according to the following flow chart figure 1.1.

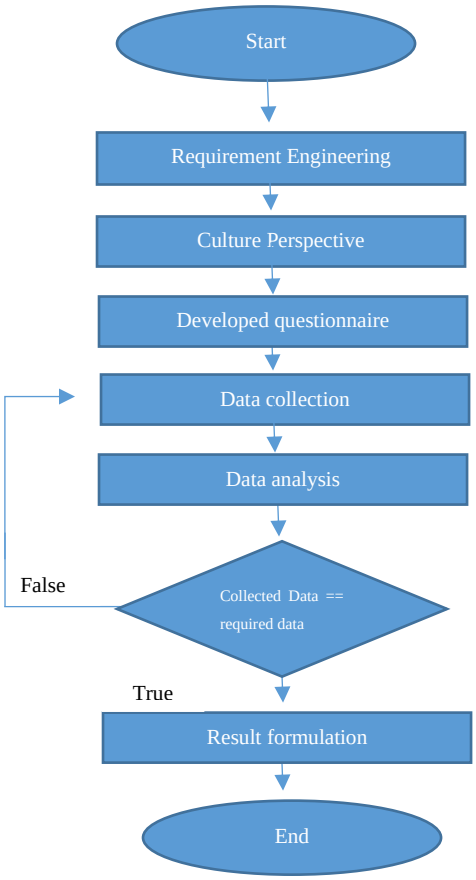


Figure 1.1

3.1 Data Collection

Questionnaire was used for data gathering in terms to address the research questions. Data were collected from different software houses, situated in different cities of Pakistan. Respondents were selected according to the following criteria.

- Respondent must be Software engineer, Requirement analyst or Developer
- Must be at least two year experience in the field of software development
- Engaged in a Pakistani software development company.
- Must be employ of a medium- to a large-sized organization
- Must be Pakistani resident

3.2 Data Cleaning

Data cleaning phase was executed systematically. On the basis of define criteria all responses were analyzed and filtered. The total number of responses were 243. In the stage of data cleaning 26 responses were excluded because of the following reasons.

- 16 responses were incomplete
- 8 respondents have irrelevant designations
- 2 respondents were not Pakistani residents

The total number of clean and valid responses turn into 217.

3.3 Data Analysis

For data analysis, to find statistical calculation, in order to compare with Hofstede Culture model, and to analyze data visually, Boxplot was used. It is also called whisker plot.

The left side of the box represent the lower quartiles and right side of the box indicate the upper quartiles. Vertical line is used to split the box in two which indicate median. There are two lines from outside the box called whiskers. That go from the minimum to the lower quartile (the start of the box) and then from the upper quartile (the end of the box) to the maximum. Small circle on the top of top whisker and below from bottom whisker indicates the outlier values. Outlier is very high or very low values in data. The top whisker in the boxplot represents the highest value in the data that is not in outlier. Similarly, the bottom whisker represents the lowest value of the data which is not in outlier.

4. RESULT AND INTERPRETATION

Boxplots are generated for individual dimensions, in order to visualize the data and to find the statistical calculations. Detailed interpretation of our results for individual dimensions are given below.

4.1 Power Distance Index (PDI) dimension

For the PDI dimension there are 217 valid responses and there is no missing or invalid value in the computation process. It can be seen from results mentioned in table 1.2 and figure 1.2 the score 3.2 and 3.6 seem to fall into 2nd and 3rd quartiles of the boxplot. There is Symmetry distribution in the data. So it can be seen that 25% of the data (Q1) has a value 2.800, similarly. The upper quartile represents 75% of the data (Q3). It can be concluded that 75% of the data has a value 3.600. The median values is 3.200 represented by bold black line in the box. As per result interpretation research show that developers in Pakistan agree on what is decided by upper management. They accept upper management orders without asking any questions. Our findings also show the worst effect of PDI in the context of requirement elicitation process, that the clients doesn't want to cooperatively discuss the main staple of business

subject. Results explore that most of the time software engineers do not argue with senior or high authority employees during requirements elicitation and negotiation process.

Table 1.2 RE PDI Boxplot

Statistics		
N	Valid	217
	Missing	0
Median		3.200
Minimum		1.0
Maximum		5.0
Percentiles	25	2.800
	50	3.200
	75	3.600
IQR		0.8
Low outlier		1.6
high outlier		4.8

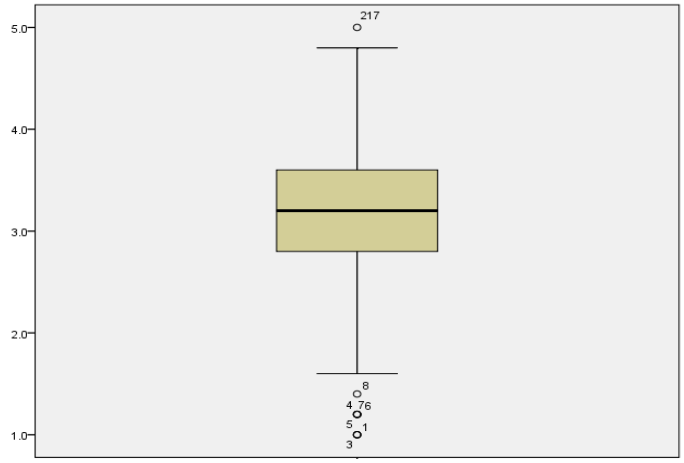


Figure 1.2 PDI Boxplot

4.2 Collectivism vs. Individualism (COL vs. IND) dimension

According to table 1.3 and figure 1.3 it is conclude that 25% of our data has a value 3.400. The median value of our data is 3.800, similarly 75% of the data has a value 4.200. Symmetry distribution is also found in the data. As per boxplot result shows that there is huge effect of COL on RE activities in the context Pakistani culture. Results show that face to face method is very use full way for requirement elicitation in the context of Pakistani culture. This face to face method allows software engineers to create trust and certain level of an emotional relationship with client, and later this relationship can be used to

understand user needs and address general challenges such as project over-budget and lack of user involvement. Achieving user satisfaction is essential and succeeding user happiness is most important which can be explained in term of feeling sympathy with client to fulfill his/her needs. The client should be satisfied. Result explore that client also trust on the strength of the relationship that is built during the requirement engineering phases.

Table 1.3 COL Boxplot

N	Valid	217
	Missing	0
Median		3..800
Minimum		1.0
Maximum		5.0
Percentiles	25	3.400
	50	3.800
	75	4.200
IQR		0.8
Low outlier		2.2
high outlier		5.4

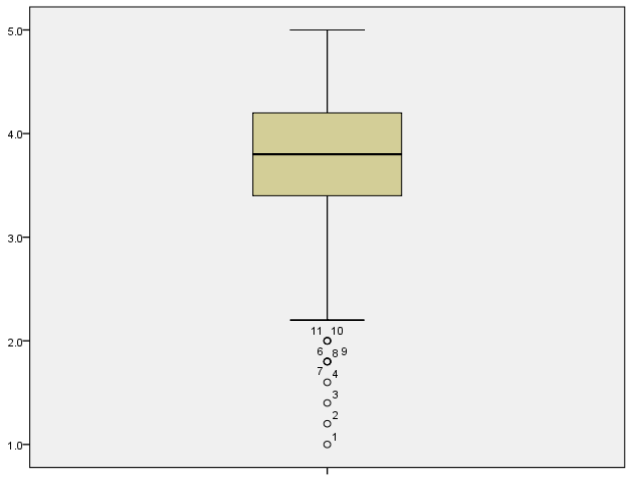


Figure 1.3 COL Boxplot

4.3 Uncertain avidness Index (UAI) dimension

As per result demonstrated by table 1.4 and figure 1.4 it can be concluded that (Q1) 25% of data has 3.00 value. Similarly the upper quartile (Q3) represents 75% of the data which has 4.00 value. The median is 3.400. Symmetry distribution found in the data

As per boxplot our result shows that there is considerable effect of UAI on RE activities in the context of Pakistani culture. Research shows that Pakistani Client respect and accept the recommendation and suggestion of the experts not because they are specialists in the field, but because these recommendations are essential and valuable in term to avoid uncertain problematic situation. Dress code is considerable in the organizations.

Table 1.4 UAI Boxplot

N	Valid	217
	Missing	0
Median		3..600
Minimum		1.0
Maximum		5.0
Percentiles	25	3.400
	50	3.800
	75	4.200
IQR		0.8
Low outlier		2
high outlier		5.

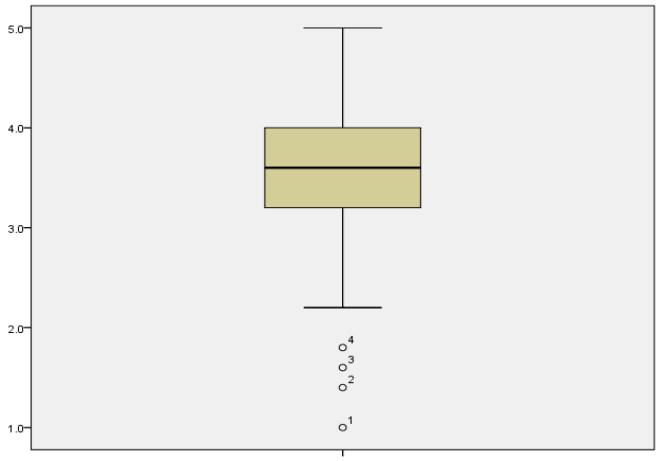


Figure 1.4 UAI Boxplot

4.4 Masculinity vs Femininity (MAS vs FEM) dimension

According to figure 1.5 and table 1.5 the first quartile (Q1) of the data has a value 3.00. Also it can be concluded that 3rd quartile (Q3) represent 75% of the data has a value of 4.00. The median value of the data is 3.400. Symmetry distribution found in the data. As per boxplot interpretation our result shows that there is great effect of MAS on RE activities in the context of Pakistani culture.

Our findings show that in Pakistani Culture the share of females working in software industry is very low. Gathering the software requirement from female stockholder is bit difficult for male software engineers due to nervousness and self-respect of the Pakistani women. Results also explore that the developers are willing to work independently rather than as a subordinate member.

Table 1.5 MAS Boxplot

N	Valid	217
	Missing	0
Median		3..400
Minimum		1.0
Maximum		5.0
Percentiles	25	3.00
	50	3.400
	75	4.00
IQR		1
Low outlier		1,5
high outlier		5.5

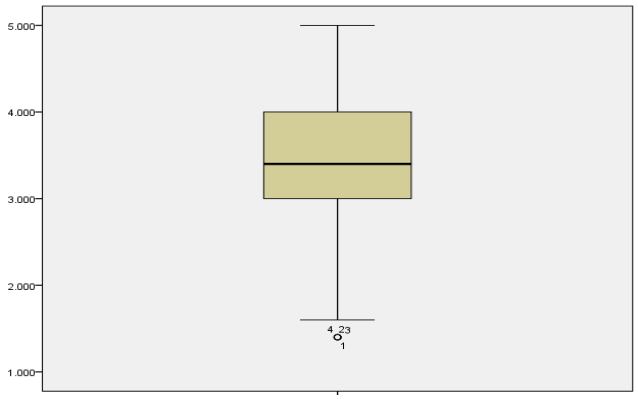
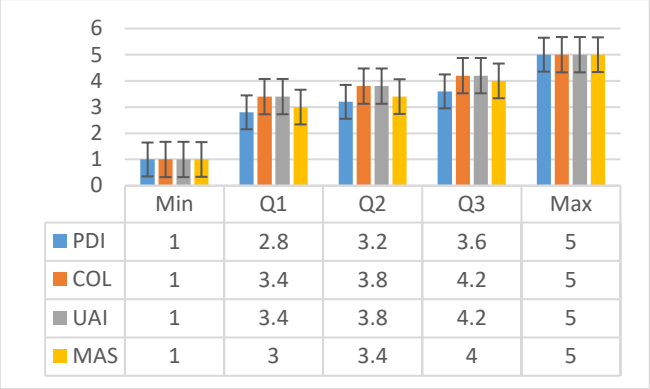


Figure 1.5 MAS Boxplot

4.5 Five number of summery

The complete statistics of all four dimensions as five number of summery are shown in the figure 1.6 that is given below.



	Min	Q1	Q2	Q3	Max
PDI	1	2.8	3.2	3.6	5
COL	1	3.4	3.8	4.2	5
UAI	1	3.4	3.8	4.2	5
MAS	1	3	3.4	4	5

Figure 1.6 Statistics of four dimensions

4.6 Comparison of Hofstede Culture model PDI, COL, UAI, MAS dimensions with obtained PDI, COL, UAI, and MAS in the Context of Pakistani National Culture.

Figure 1.7 represents complete Hofstede culture Model, the score of first dimension PDI is 2.75 represented by redline in the figure, while the result discovered that the PDI effects more than Hofstede culture model which is 3.2. That indicate that there is strong effect of PDI on RE activities in the context of Pakistani Culture.

The second dimension of Hofstede culture model is MAS which is 4.3 represented by redline in the figure 1.7. As per the results MAS is 3.8 which indicate that there is huge effect of MAS on RE activates in the context Pakistani culture then Hofstede Culture Model. It is considerable that this dimension has a huge impact on RE activities rather than other dimensions.

The third dimension of Hofstede culture model is UAI which is declared 3.5 by Mr. Hofstede shown by redline in the figure 1.7. But the results of this research show additional effect of UAI then Hofstede Culture model on RE activates in the context of Pakistani nation culture which is 3.6. Hence result explored the huge influence of this dimension on RE activities and practices in the context of Pakistani National Culture Profile.

The fourth dimension of the Hofstede culture model is MAS which is 2.5. It show that there is no impact of femininity or masculinity because of their middle value 2.5 out of 5. This dimension represent both the influence of femininity and Masculinity. If the value of this dimension is grater then 2.5 then it would show Masculinity influence otherwise it would show femininity influence. According to the results of this research the score of MAS dimension is 3.46 that's why findings exposed that, there is clear impact of Masculinity on RE activities and practices in the context of Pakistani culture.

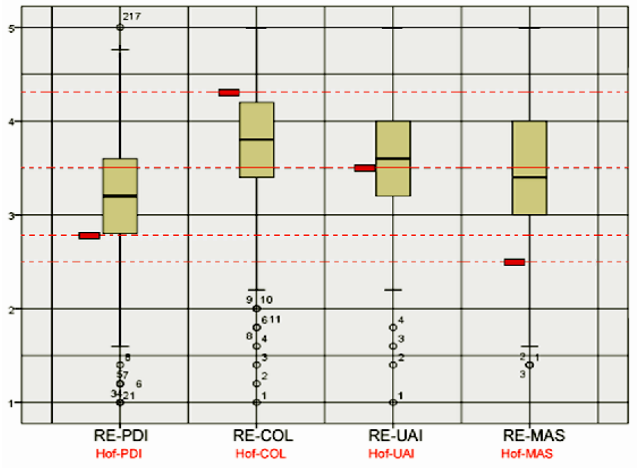


Figure 1.7 Caparison Hofstede Culture with our obtained result

5. CONCLUSION

The main idea of the RE is to gather software requirements from different stockholders, therefor it is vital to have an effective communication among requirement engineer and other stakeholders in terms to fulfill user needs. As it is possible that the participants might be influenced by their culture or the norm and values of the society. The purpose of this research was to analyze and determine the influence of Pakistani national cultural on the RE activities in the light of Hofstede Culture Model dimensions. Questionnaire was used for data collection from 217 software practitioners.

To visually show and to determine the distribution more specifically to show sekweness and different quartiles of the data, Boxplot is used. It is also used in order to perform statistical calculation to interpret the results of the different dimensions. Each individual dimension form four dimensions was compared with Hofstede Culture Model. The collected data has shown additional influence on RE activities then Hofstede Culture Model. The outcome of the research support Hofstede Culture model and Hofstede Culture Model support the result of the research. This research would be helpful to scholars for future exploration in the field of requirement engineers and assistance to raise awareness of the impact of PDI, COL, UAI and MAS on RE process and practices in the context of Pakistani national culture. In future we expect to replicate the work to shelter other cultures such as the Canada and China.

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