

**IMPACT OF DISSOCIATION OF SOFTWARE DEVELOPERS IN
PARTICIPATIVE DECISION MAKING (PDM) BY MANAGEMENT
ON PRODUCT PERFORMANCE: A STUDY OF PAKISTAN'S
SOFTWARE INDUSTRY**



Sumayya Iftikhar

Enrollment No: 01-246191-013

Supervisor: Dr. Abdul Baseer Qazi

A thesis submitted to the Department of Software Engineering, Faculty of
Engineering Sciences, Bahria University, Islamabad in the partial fulfillment
for the requirements of a Masters degree in Engineering Management

April 2021

Approval Sheet

Thesis Completion Certificate

Scholar's Name: SUMAYYA IFTIKHAR Registration No: 01-246191-013
Programme of Study: MS-ENGINEERING MANAGEMENT
Thesis Title: IMPACT OF DISSOCIATION OF SOFTWARE DEVELOPERS
IN PARTICIPATIVE DECISION MAKING (PDM) BY
MANAGEMENT ON PRODUCT PERFORMANCE: A STUDY
OF PAKISTAN'S SOFTWARE INDUSTRY

It is to certify that the above student's thesis has been completed to my satisfaction and, to my belief, its standard is appropriate for submission for Evaluation. I have also conducted plagiarism test of this thesis using HEC prescribed software and found similarity index at 17% that is within the permissible limit set by the HEC for the MS/MPhil degree thesis. I have also found the thesis in a format recognized by the BU for the MS/MPhil thesis.

Principal Supervisor's Signature: _____

Date: 15-march-2021

Name: Dr. Abdul Baseer Qazi

Certificate of Originality

This is certifying that the intellectual contents of the thesis IMPACT OF DISSOCIATION OF SOFTWARE DEVELOPERS IN PARTICIPATIVE DECISION MAKING (PDM) BY MANAGEMENT ON PRODUCT PERFORMANCE: A STUDY OF PAKISTAN'S SOFTWARE INDUSTRY Are the product of my own research work except, as cited property and accurately in the acknowledgements and references, the material taken from such sources as research journals, books, internet, etc. solely to support, elaborate, compare and extend the earlier work. Further, this work has not been submitted by me previously for any degree, nor it shall be submitted by me in the future for obtaining any degree from this University, or any other university or institution. The incorrectness of this information, if proved at any stage, shall authorities the University to cancel my degree.

Signature: _____

Date: 15-MARCH-2021

Name of the Research Student: SUMAYYA IFTIKHAR

ABSTRACT

Participative decision making (PDM) is one of the most essential factors in context of an organization. It is defined as 'the art of involvement of employees in decision making to accomplish organizational objectives'. A wide range of research shows that the involvement of engineers in organizational decision making was low. This indicates the possibility of firm's managers are not being analytical about employee's participative decision making, possibly due to the concept of high power distance culture. In this type of culture, employees are only considered as workforce, and their opinions are not considered valuable. Moreover, Management usually expects a single certain answer for clear direction instead of a variety of possible options. This study aims to investigate the impact of participation of software developers in decision making on product performance. For this purpose, the impact of age, qualification, gender, job satisfaction in the workplace, and product performance on the level of PDM of software developers have been investigated. This study was conducted in the software industry of Pakistan. In this study, a quantitative research approach is used. The data for this study was collected through a questionnaire from a sample of 200 software developers working in the software houses across Pakistan. The findings of the data were analyzed using SPSS. The results show that significant relationship exists between level of PDM and product performance. Similarly, significant relationship exists between level of PDM and job satisfaction. The results of this study can help decision-makers in understanding that participative decision making significantly increases the employee's work outcomes, like employee's job satisfaction and productivity of employees in terms of product performance to their organization.

Keywords: Participative decision making, job satisfaction, employees, organization, product performance, product development.

ACKNOWLEDGEMENTS

First, all praises to Allah, the Almighty, for His blessings and providence of strength that enabled me to accomplish my thesis. Whatever I have achieved, I owe it to Him. I am ineffably indebted to my supervisor Dr. Abdul Baseer Qazi for his thorough guidance and encouragement. I would like to thank my family and friends for their encouragement and all the support they have given me. Their support has been an invaluable source of motivation until completion of my thesis. Finally, I would like to express my gratitude to the software houses who spare their valuable time to share their valuable responses for filling questionnaires.

Table of Content

Approval Sheet	ii
Certificate of Originality.....	iii
ABSTRACT.....	iv
ACKNOWLEDGEMENTS.....	v
LIST OF FIGURES	viii
LIST OF TABLES.....	ix
ABBREVIATION	x
CHAPTER 1	1
INTRODUCTION	1
1.1 Participative decision making.....	1
1.1.1 Importance of Participative decision making.....	1
1.2 Product performance.....	2
1.2.1 Role of managers in new product performance	2
1.3 Job satisfaction.....	2
1.4 PROBLEM STATEMENT.....	3
1.5 RESEARCH QUESTIONS	4
1.6 OBJECTIVES.....	4
1.7 SIGNIFICANCE OF THE STUDY.....	4
CHAPTER 2	6
LITERATURE REVIEW	6
2.1 Participative decision making.....	6
2.1.1 Summary of researches related to Participative decision making.....	8
2.2 Employee demography and Level of participative decision making.....	8
2.3 Level of Participative decision making and product performance.....	9
2.4 Level of Participative decision making and job satisfaction.....	10
2.5 Theoretical Framework.....	12
2.5.1 Variables	12
2.6 Hypothesis	12
2.6.1 Explanation of Hypothesis.....	13
CHAPTER 3	23
RESEARCH METHODOLOGY.....	23
3.1 Research Design.....	23
3.2 Data collection	23

3.3 Questionnaire design.....	24
3.3.1 Measurement Scales.....	25
3.4 Sampling Design.....	26
3.4.1 Target Population.....	26
3.4.2 Sample Size.....	26
3.4.3 Sampling Technique	26
3.5 Data Analysis	27
3.5.1 Descriptive analysis	27
3.5.2 Inferential analysis	27
3.5.3 Reliability analysis.....	28
CHAPTER 4:	30
DATA FINDINGS AND ANALYSIS	30
Introduction.....	30
4.1 Data Analysis.....	30
4.1.1 Descriptive Frequencies.....	30
4.1.2 Reliability Analysis.....	31
4.1.3 Independent Sample T-Test for H1, Employee’s Gender.....	32
4.1.4 One Way ANOVA for H2, Age Group of Employees.....	33
4.1.5 One Way ANOVA for H3, Employees’ Education	34
4.2 Descriptive Statistics.....	35
4.3 Correlation Analysis	36
4.4 Regression Analysis.....	37
4.4.1 Relationship between Level of PDM on Product Performance	37
4.4.2 Relationship between Level of PDM on Job Satisfaction.....	39
4.5 Data Findings	40
4.6 Discussion.....	42
CHAPTER 5	43
DISCUSSIONS AND CONCLUSION	43
5.1 Introduction.....	43
5.2 Discussion.....	43
5.3 Limitations and Future Recommendations	43
5.5 Conclusion:	44
REFERENCES	45
APPENDIX.....	49
QUESTIONNAIRE	49

LIST OF FIGURES

Figure 1.1: Thesis structure.....	5
Figure 2.1: Theoretical framework	12
Figure 3.1: Research methodology	29

LIST OF TABLES

Table 2.1: Summary of researches on PDM	8
Table 2.2: Important Research Papers in Literature Review	14
Table 3.1: Scale used in the questionnaire	26
Table 3.2: Ranges of alpha.....	28
Table 4.1: Frequency distribution	30
Table 4.2: Reliability Statistics	31
Table 4.3: Independent sample t-test	32
Table 4.4: one way ANOVA for H2.....	33
Table 4.5: one way ANOVA for H3.....	34
Table 4.6: Descriptive Statistics	35
Table 4.7: Correlation	36
Table 4.8: Regression Analysis for H4	37
Table 4.9: Regression Analysis for H5	39
Table 4.10: Results of Hypothesis	41

ABBREVIATION

PDM	Participative decision making
NPD	New product development
LOP	Level of participative decision making
JS	Job satisfaction
PP	Product performance

CHAPTER 1

INTRODUCTION

1.1 Participative decision making

Employee's involvement in decision making is an important aspect of an organization. Decision making is considered as the essential part of a manager's duty [2]. It is also essential to remember that most important decisions in an organization will be taken by team lead or executive teams. Also, there are certain smaller decisions that are often taken by managers and team members without including employees. In an organization, trust is an important factor. When employees trust their management and believe in their organization, it motivates and promotes the contribution of their employees in decision making which increases the efforts of employees, which benefits employee's commitment to work and their job satisfaction. In turn, all of the above aspects, lead to the establishment of a trustworthy relationship between employee and manager [3]. Participative decision making is the degree to which a manager motivates or allows employees to participate or share their ideas and suggestions in decision making to achieve the same organizational goals [4]. Participation in decision making provides an employee with greater autonomy of their particular job tasks and helps in increasing the understanding of participation in organizational decision making. Participative decision making (PDM) is considered as an important practice towards creating a higher level of employee trust in their respective organization. It also helps in the betterment of the organization [2].

1.1.1 Importance of Participative decision making

Employees are the important part of the organization who participates in the achievement of the organizational goals. The reason is that employees are major operators who are in great positions to consider the challenges they face in doing a particular task and know the best possible way to solve them. The process involves in participative decision making is of engaging and encouraging workers to use their opinion to build value and enhance organizational efficiency.

Involvement or participation of employees in decision making is characterized as a process of involving and encouraging employees to use their views and ideas to generate value and enhance organizational performance. The process of engaging and

encouraging workers to use their knowledge to build value and enhance organizational efficiency is Participative Decision Making [5]. But in organizations there are some reasons mainly due to power distant culture employees are seen and not involved in decision making [3]. Power distance is the concept in which less powerful employees or lower-level employees in an organization willingly accept without any question that power is distributed unequally.

1.2 Product performance

New product development has now become a crucial strategic practice for many businesses because new products contribute increasingly important to profits and sales. Indeed, new products are constantly being cited as the secret to the market's corporate success. New product development in an organization represents a significant source of competitive advantage [6].

1.2.1 Role of managers in new product performance

One of the primary functions of management is managerial control. In order to make sure that the goals of particular project are met, some issues are fronting innovation managers that how to use adequate management control over the teams involved in new product development (NPD). The four measures of new product performance include; adherence to budget, adherence to schedule, product quality, and commercial-success [7]. Managers are therefore under pressure to exploit the efficiency of product development of their businesses. To achieve this, it requires more reliable and productive development procedures. Thus, the efficiency of new product development NPD output is linked to schedule, quality, cost, pace, and highlights short-term results [6]. Projects and operations of new product development empower businesses to break into new market segments, products, and technological arenas to well able to meet the needs and also demands of customers, offer better benefits in terms of cost and quality, and deliver new products and services to the targeted customers on time [8].

1.3 Job satisfaction

Job satisfaction is considered to be a significant concept. Employee's level of participation in decision-making is the initiative of employees that leads to work conditions being co-determined and enhanced job satisfaction. Participative decision-making's primary goal is to gain advantage from the practical motivational results of better employee participation, and employee participation has motivational results in

terms of improved employee job satisfaction [9]. Job satisfaction is a significant measure in economic and social terms. According to the research, employee's freedom to participate in decision making ultimately enhanced their overall job satisfaction. Different studies on job satisfaction have recognized the positive relationship between employee participation in decision making and job satisfaction [10]. Furthermore, the organizations have understood the value of promoting their employees' engagement in all kinds of activities. Participation in decision-making (PDM) is also considered as a management approach to encourage organizational commitment with the sole purpose to enhance organizational performance and job satisfaction [11]. The overall performance of an organization comes from participation in decision making. Previous literature also indicates that in order to satisfy employees and their higher order needs, employees would expect participative decision making in their workplace [13].

In this research firstly, some previously done work on employee demography; employee age, gender, education will be explained. Secondly, the relationship between employee demography and participative decision making will be examined. Afterward, the relationship between participative decision making with its outcome variables like product performance will be examined then the relationship between participative decision making and job satisfaction of employees will be examined. The current research defines how likely the participative decision making PDM can impact organizational issues; product performance and job satisfaction of employees working in an organization. This study examines the impact of participative decision making PDM on five different product performance outcomes; budget, schedule, quality of product, commercial success. Moreover, it would be figured out whether the relationship between participative decision making with its outcome variables like job satisfaction and product performance should be strong or blur. Besides, how this relationship affects the job satisfaction of employees working in the software industry.

1.4 PROBLEM STATEMENT

While taking decisions during the development of a new project the management does not involve employees in the process, despite knowing its impact on the growth of the organization. Participation in decision making has turn out a significant issue in today's organizations, especially in software houses because of its capability of increasing the employees' work outcomes. Introducing participation of employees in decision making in the work environment is said to increase the creativity of employees.

There is a need to identify if software developers working in software houses are encouraged or not in participative decision making (PDM) and what will be its impact on the product performance. The research aims to investigate the effect of employee demography on the level of participative decision making (PDM). Moreover, the relationship between level of participative decision making with its outcome variables, like product performance and job satisfaction of employees will also be examined.

1.5 RESEARCH QUESTIONS

- What is the influence of employee's gender on the level of Participative decision making?
- What is the influence of employee's age on the level of participative decision making?
- What is the influence of employee's education on the level participative decision making?
- What is the relationship of level participative decision making on job satisfaction?
- What is the relationship of level of participative decision making on product performance?

1.6 OBJECTIVES

- To determine the impact of employee gender on the level of participative decision making.
- To determine the impact of age range of employee's on the participative decision making.
- To determine the impact of employee's education on the participative decision making.
- To determine effect of the level of PDM towards the employee's job satisfaction.
- To determine effect of the level of PDM towards the product performance.

1.7 SIGNIFICANCE OF THE STUDY

Participative decision making is not a new concept but in the Pakistan software industry, no significant research related to participative decision making was found. The findings of this study will mainly be for the Software Houses of Pakistan.

Moreover, it is also observed that engineers have well-built quantitative skills and they are trained to be analytical along with quantitative skills, so it fades their probabilistic thinking skills and they lack such skills [14] and most organizations would rather use different decision making models which stops their creative thinking skills which help in decision making. In addition, accepting ambiguity among a team of technical experts who participated in decision making observed as a sign of ignorance or weakness. For instance “if manager/team lead allows an employee to take part in decision making, then it is assumed that an employee should know all the right answers deprived of any ifs or buts”. This is denoted as the “Expert Bias” by decision-makers. In some other conditions, management punishes their employees for showing uncertainty in their estimations or answers. To conclude, Management would not expect any kind of uncertainty from their employees and they only expect a single certain answer instead of a variety of possible answers regardless of the decision situation and doubts that might surround it. Through participative decision making (PDM), product performance would also enhance which would automatically enhance the overall performance of an organization. Research related to PDM in Pakistan is still very limited, especially in the software industry. Therefore, this research is being conducted to develop a better understanding of participative decision making, related variables, and their outcomes in the context of Pakistani culture in a software development setting.

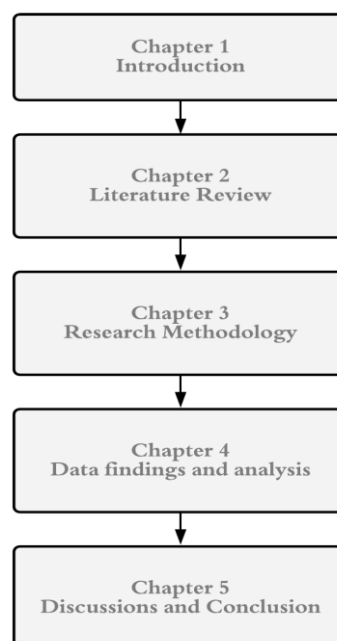


Figure 1.1: Thesis structure

CHAPTER 2

LITERATURE REVIEW

2.1 Participative decision making

Participative decision-making is considered as the level at which team members in the product development process are encouraged to participate in and also they have an influence on group decisions related to the development of the new project [7]. Participative decision-making can affect firm performance, but the past researches on PDM showed that in most organizations, employee involvement in decision making was relatively low. This indicates that the organization managers are not being rational about employee's Participation in decision making, possibly due to the tradition of power distance culture in organizations, in which employees are only seen and rarely heard [15] [16].

In this research relationship between employee demography (employee age, gender, education level) with participative decision making will be explained. Besides, the relationship between participative decision making and its outcome variables like product performance and job satisfaction will be examined. Moreover, it would be clarified if participative decision-making (PDM) can enhance product performance and job satisfaction of employees or not. In the context of an organization employees' participation in decision making (PDM) takes a significant role in encouraging the overall performance of employees. There is still limited research to check the level of employee participation in decision making among the different groups of employees that work in the different sectors [17]. A wide range of research shows that there is a strong relationship between executive teams and decision-making. In addition, the decision making practices are positively associated with organizational efficiency [18].

Past Researchers also found that organizations who engage their employees in a higher level of PDM processes more operational decisions and improved the performance of their organization [19]. This shows that participative decision making is considered a valuable means for improving the feasibility of an organization and eventually the strategic choices [20]. An author in his research discussed that the highest percentage of engineer's participation in decision making was 95.8% and similarly the lowest percentage was 74%. The overall percentage is 84.5%. It shows that the majority of the engineers working in an organization reported that they had

experience in decision-making. Participative decision making (PDM) between the engineers allows employees a great familiarity and understanding with their tasks and is also considered a very strong entity among them. Moreover, if the engineers are satisfied with their participation during the decision making, they gave full support and contribution to the organization [16]. There is still a lack of research to check the level of PDM among the group of employees that work in the software houses [12]. The involvement of employees in decision making was categorized in various ways in literature; by scope, depth, and type. In terms of depth participation, Pateman in his research distinguishes between partial, pseudo, and complete involvement of employees in decision making. In terms of pseudo participation, Employers (or managers) use data collection methods in their pseudo-participation to tackle problems while convincing workers to make decisions that interest them. The second scenario is partial employee involvement in decision making, but the management body retains the bulk of its liability. In the final scenario, the complete involvement of employees in decision making and the sharing of power equally distributed between workers and managers [22]. Moreover, Employees participation in decision making directly enhance knowledge sharing behavior [21].

The main aspect is product performance. It is defined as the measure of different aspects of a product, the four dimensions of new product performance outcomes; adherence to budget, adherence to schedule, product quality, and market success [23]. A wide range of research shows that the profitability of organizations increasingly depends on the ability of the firm to make new products and introduce them to the market. In general, a new product development NPD project normally has main targets for product cost, investment, performance, time as well as functionality [24]. In the new product development (NPD), management control includes the attempts taken by the manager to influence team members who participated in new product development to produce successful results [25].

Another aspect is job satisfaction. It is defined as the satisfaction of team members with respect to the number of responsibilities given during the project, recognition, opportunities, and supervision offered during the project development [7]. An author in his research also defined job satisfaction as a task of the observed relationship between what the employee observes his job to be offering and what an employee truly seeks to gain from his job [10].

This research will investigate the effect of the level of participative decision making of employees on above mentioned aspects of an organization.

2.1.1 Summary of researches related to Participative decision making

Characteristics	Relationship	Researches
Participative decision making	Organization Performance	[15], [33], [17], [12], [31]
	PDM differentiated by industries	[17]
	Employee Trust	[30], [28]
	Employee Education	[31], [17], [28]
	Job satisfaction	[17], [28]
	Employee Gender	[27], [17], [28], [31]
	Organization commitment	[17], [33], [31]

Table 2.1: Summary of researches on PDM

2.2 Employee demography and Level of participative decision making

In this research, employee demography; employee age, gender, education will be explained. An author in his research investigated the relationship between employee demography and participation in decision making (PDM). The findings revealed that an employee with a higher degree is more likely to participate in decision making than others who have a lesser educational background. In addition, the young employee tends to participate more in management decision making than an older employee [26]. Also, male employees show a higher level in Participative decision making (PDM) as compared to the female non-management employees [17].

Both men and women are considered important pillars of society. Previous researches show that the management style of women will boost the performance of the business. The businesses surveyed, which had men and women, seem to have taken the right steps to handle and survive the crisis. On the other hand, the companies headed by men used new distribution networks through new technology and networking, while taking strong cost-cutting steps and laying down employees at the same time. Similarly, companies headed by women have improved their customer relationships and added value to their deals while retaining their jobs and employment benefits as stable as possible [27].

A study examined and build the relationship among different individual factors and Participative decision making (PDM) in an organization [28]. The data for the research was gathered from employees working in the Malaysian private sector including 32 middle and top-level management employees. The findings of the study revealed that an organization's success depends on the employees being able to develop new ideas and ways to overcome their rivals. This is accomplished by employee participation in decision making. The author further discussed that employees must participate in order to recognize the need for innovation, and employees must participate to change their habits in the workplace in new and enhanced ways. The important aspect of organizational life is employee participation which improves organizational efficiency and positive perception of employees towards the organization. Participation of employees in decision-making (PDM) is one of the modern ways of employee participation in decision-making in organizations.

2.3 Level of Participative decision making and product performance

Participation of employees in decision making establishes a strong bond between staff and an attractive work environment in which management and staff participate openly and create a positive relationship among them. Employee association in decision-making can also be seen as a motivation to foster good actions and high productivity and ultimately improves product performance. The study found that involvement in decision-making increases productivity [26]. An author in his research describes the relationship between worker involvement in decision making and organizational performance. Moreover, explores and reveals differences between the performance of the organization, where employees are less involved in decision making and the performance of the organization, and where employee participation in decision-making

is greater and its impact on the performance of the organization [29]. The presence of participatory decision-makers in the workplace has been described as decision-making linked to shared ideas. The benefits of employee engagement in decisions include confidence among employees and improved productivity [30]. Previous Researches also showed that the strong positive relationship exist between participative decision making of employees and the dimensions of product performance i.e. adhere to the budget, adhere to schedule, and product quality [7].Organizational objectives are accomplished when employees are encouraged to participate in decision making by their managers or team leads. The concept of employee participation is very important in different fields including management. The participation of the employee in organization decision making is seen as a way to inspire employees to adopt a positive attitude towards work and high productivity [3].

Employee motivation is also a significant factor in participative decision making. A study explored the relationship between employee participation in decision making with the organization performance [31]. The greater level of employee participation in decision making, the higher the level of firm overall performance. The result shows that a positive relationship exists between (PDM) participative decision making and firm performance. So, it is considered that Participative decision making is an essential part of an organization that influences firm performance and the most suitable options that can be implemented in the organization and helps in improving product innovation performance [32].

2.4 Level of Participative decision making and job satisfaction

In this research, job satisfaction mainly refers to the team member's satisfaction who participated in decision making with respect to the supervision, recognition, opportunities and responsibilities offered during the development of a new product [25].

Teamwork between employees and managers will benefit the organization. Moreover, there is a strong and positive link between individual effectiveness and organizational effectiveness. This indicates that managers must treat their employees fairly in order to achieve organizational goals, and encouraged employees to participate in decision making. Employees who enjoy participation in decision-making and satisfied with the acknowledgment they got for their efforts on the project will be committed to the organization [31].

Participative decision making provides employee's direct or indirect involvement and also provides a chance to influence other employees in different levels of the organization. It has been noted that employees who are involved in decision making know more about their tasks than team leads. Also, employees who are participating in such decisions consequently are better prepared to implement assigned tasks following the decision. In addition, the higher levels of employee participation in decision making positively related to higher levels of job satisfaction [33].

Another research described that the employees who are more involved in participative decision making activities showed less negative consequences of job insecurity than employees who do not become a part of decision making activities or hardly become a part of such opportunities [34].

Participative decision making (PDM) does not generally mean that workers are able to vote on larger issues such as downsizing. However, Participative decision making (PDM) provides workers with more autonomy of their own work activities and an improved knowledge of and participation in the decision-making process in organizations. A research was conducted on employee's participation in decision making and job satisfaction. The findings of the research revealed that the employees that participate less in decision making leads to low level of employee job satisfaction [35].

Some authors examined the relationship among Participative decision making (PDM) and job satisfaction. The data corresponds to employees across 39 countries. The results showed that there is a positive relationship between employee participation in decision making (PDM) and job satisfaction. According to Clark, for both married and widowed employees, there is also a strong positive impact on job satisfaction [13].

2.5 Theoretical Framework

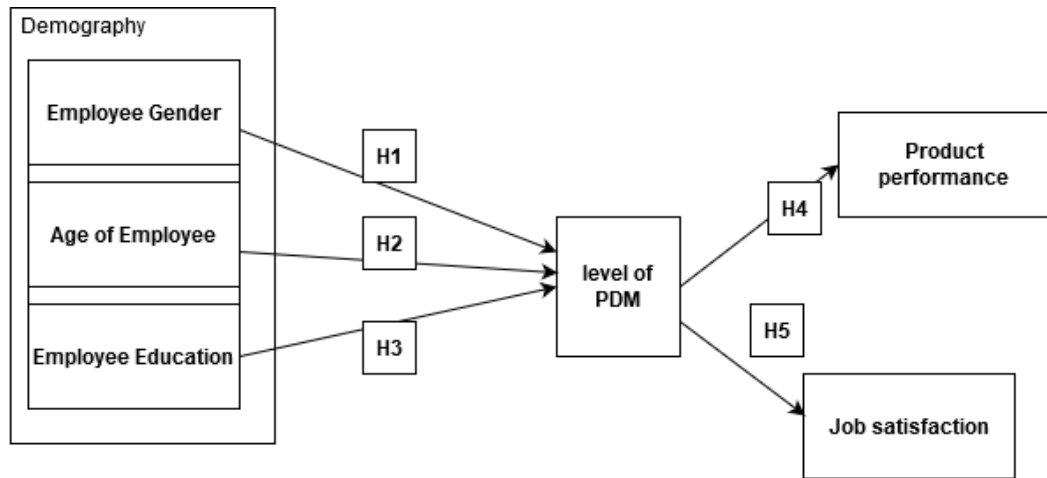


Figure 2.1: Theoretical framework

2.5.1 Variables

The present section includes the explanation of variables used in this study. The variables included in the Employee demography section are the independent variables that are related to Employee gender, Age of employee, and employee's education qualification. Level of Participative decision making (PDM) is taken as mediator and product performance and job satisfaction are considered as outcome variables.

2.6 Hypothesis

- H1: Male Software developers show significant difference in Participative decision making as compared with female software developers
- H2: Senior software developers show more participation in participative decision making as compared with junior software developers.
- H3: software developers with higher education show higher level of participative decision making
- H4: There is a positive relationship between participative decision making and product performance.
- H5: There is a positive relationship between participative decision making and job satisfaction.

2.6.1 Explanation of Hypothesis

The purpose is to investigate the respondent's level of participation in decision making in the software industry of Pakistan. Five point Likert scale will be used to collect the feedback of respondent's on the statement that is related to the participative decision making (PDM).

This research aims to investigate the impact of different types of variables on level of participative decision making. In the light of this five hypotheses are being developed. First three hypotheses are demography of employees and its impact on participative decision making. And the remaining two are outcomes of participative decision making; job satisfaction and product performance. In hypothesis 1 it is assumed that male software developers show significant differences in PDM compared with female developers. It is assumed that female professional workers tends to have lower level of PDM compared to male professional workforce.

In hypothesis 2 it is assumed that Employees with higher education qualification show a higher level of Participative decision making PDM. Employees are categorized into four groups based on their education qualifications. It is assumed that the more qualified employees working in an organization the more management/ team leads will encourage them to involve in Participative decision making during new project development. Moreover, an employee with higher educational qualifications appears to have more impact on decision making than those who have lower qualifications in education [26].

In hypothesis 3 it is assumed that senior developers show higher level of Participative decision making PDM as compared with junior software developers. It is also considered that it is not the role of the management of the company to contact young employees about decision making.

In hypothesis 4 it is assumed that there is a positive relationship between participative decision making and product performance. Through participation in decision making, employees will take more ownership in their work and it will enhance overall product performance. Moreover, if the supervisors are receptive and supporting employees to participate in decision making and collect information from the employees about how to complete tasks in a team environment, all of above will lead

to an increase in efficiency, and ultimately an increase in good teamwork and enhance product performance.

In hypothesis 5 it is assumed that the more the level of Participative decision making in an organization the more software developers will get satisfied with their job. If the team leads maintain two-way communication among employees and allows them to participate in decision making and build a good relationship with them, the employees will become more promising with their job and this will led to the higher job satisfaction of employees. Most of the researches gave findings that Participative decision making PDM led to higher job satisfaction [36]. On the other hand, if the team leads will not be supporting their employees in decision making and does not listen to their ideas and suggestions carefully about the project, it will lead to lessen their job satisfaction.

Table 2.2 Important Research Papers in Literature Review

References	Details
[31]	<p>Citations: 102</p> <p>journal/conference: journal</p> <p>Findings: Findings shows that there is a positive relationship between the process of employee participation in the decision making and work motivation of employees. Also, the awareness of employees about different participation programs plays an important role.</p> <p>Methodology: The design and data analysis of the whole research is based on a quantitative approach. SPSS is used to analyze the data. Respondents are supervisors and middle-level managers.</p> <p>Future Recommendations: Future research needs to analyze employee performance in an organization and job satisfaction.</p>
[26]	<p>Citations: 97</p> <p>journal/conference: journal</p> <p>Findings: The findings of the study, therefore, confirmed that the employees show a positive approach towards participation in</p>

	<p>decision making, but the actual level of participation they utilize is negative.</p> <p>Methodology: The mixed method approach is used and open and closed-ended questions were asked.</p> <p>Future Recommendations: no</p>
[7]	<p>Citations: 18</p> <p>journal/conference: journal</p> <p>Findings: The findings of the study revealed that activities included in the process of new product development teams are beneficial to product performance w.r.t quality of the product, adherence to schedule, adherence to budget, and also job satisfaction of team members.</p> <p>Methodology: Data was gathered via a web-based questionnaire sent to each company's senior manager responsible for product development activities. The respondents were asked to show their knowledge about new products and processes during new product development using seven points Likert scale.</p> <p>Future Recommendations: Capture effects of process monitoring during new product development and process-based rewards on some other essential variables such as team participation and communication, team self-government, and team coordination.</p>
[8]	<p>Citations: 75</p> <p>journal/conference: journal</p> <p>Findings: The study uses performance frameworks, tools, and skills to demonstrate how constructive strategic flexibility in decision-making plays a key role in creating innovative products which can generate new markets and meet consumer requirements. Collect information on the production and output of goods by companies in different industries located in Europe.</p>

	<p>Methodology: Quantitative research, questionnaires distributed using mail and through internet based surveys</p> <p>Future Recommendations: Future research needs to capture Some decision level factors, such as (uncertainty in decision making and decision making importance) that directly interact with new product development teams. Also exploring the effects of such variables on flexibility during decision-making in NPD New product development.</p>
[37]	<p>Citations: 28</p> <p>journal/conference: journal</p> <p>Findings: creativity increases when employees are allowed to participate in decision making, Participative decision making PDM is the positive indicator of the creativity of employees.</p> <p>Methodology: The proposed model examines the direct effect of Participative decision-making and creativity. Data collected from employees and managers working in different organizations.</p> <p>Future Recommendations: Effects of Participative decision making on different variables like resources availability, rewards, freedom, criticism and Communication that is related to the work environment.</p>
[28]	<p>Citations: 77</p> <p>journal/conference: journal</p> <p>Findings: the positive relationship between two variables i.e. Demographic similarity of employees and PDM Participative decision making and some related variables as well.</p> <p>Methodology: Data were collected from the middle and top-level management teams.</p> <p>Future Recommendations: Expand current research by concentrating on the participation of employees in the different levels of decision making in an organization.</p>

<p>[28]</p>	<p>Citations: 2</p> <p>journal/conference: journal</p> <p>Findings: The findings have shown that most respondents meet their representatives at work and address them at any time. Most of the workers regularly participated as consultative participation with their leaders than delegative participation.</p> <p>Methodology: questionnaires were distributed among 332 employees at middle-level management based on three different job positions.</p> <p>Future Recommendations: no</p>
<p>[25]</p>	<p>Citations: 10</p> <p>journal/conference: journal</p> <p>Findings: male employee inclined to have a higher level of participative decision making as compared to female employees. Also Senior or experienced employees show a higher level of participative decision making PDM as compared to junior level employees</p> <p>Methodology: Surveys collected from employees working in both sectors i.e. servicing and manufacturing industries and their level of participative decision making.</p> <p>Future Recommendations: Future research needs to examine the Relationship of participative decision making PDM with other outcome variables related to the organization.</p>
<p>[14]</p>	<p>Citations: 3</p> <p>journal/conference: review paper</p> <p>Findings: A paradigm that introduces decision-making in engineering management (why engineers are not exhilarated to participate in decision making)</p> <p>Methodology: no</p> <p>Future Recommendations: no</p>

[12]	<p>Citations: 8</p> <p>journal/conference: journal</p> <p>Findings: Strong positive relationship between employee performance and participative decision making.</p> <p>Methodology: The questionnaire related to Participative Decision Making and Employee Performance was distributed among experts in Management Department</p> <p>Future Recommendations: no</p>
[25]	<p>Citations: 70</p> <p>journal/conference: journal</p> <p>Findings: Findings showed that managers avoid PDM practices in their organizations. The study focused on employee trust in top management. The relation between the internal interaction of employees and the loyalty of employees was explained.</p> <p>Methodology: Development and administrative staff participated in surveys to collect the data.</p> <p>Future Recommendations: no</p>
[35]	<p>Citations: 13</p> <p>journal/conference: journal</p> <p>Findings: Insufficient engagement of workers in decision-making results in a low degree of satisfaction of employees.</p> <p>Methodology: Data were gathered from employees through the questionnaire. The questionnaires include significant questions related to work satisfaction, organizational engagement, staff's perception of loyalty, and involvement in decision-making.</p> <p>Future Recommendations: no</p>
[39]	<p>Citations: 19</p> <p>journal/conference: journal</p> <p>Findings: Relationship between employee trust in organization and participation in decision making.</p>

	<p>Methodology: Development and administrative staff were participated in surveys to collect the data</p> <p>Future Recommendations: Other factors that influence Participative decision making PDM, such as organizational structure and community, leadership, and the willingness of workers to participate.</p>
[35]	<p>Citations: 6</p> <p>journal/conference: journal</p> <p>Findings: Employees are significantly increasing their involvement in decision-making which improves productivity. Employee engagement in decision-making increases work quality dramatically. , participatory decision-making plays a vital role in achieving an organizational goal.</p> <p>Methodology: research design survey is used to collect data</p> <p>Future Recommendations: Effects of employee participative decision making on the performance of the SME's small and medium scale enterprises</p>
[15]	<p>Citations: 14</p> <p>journal/conference: journal</p> <p>Findings: Employees' awareness in decision-making was poor. In order to improve the efficiency of the company, the organization focused on increasing PDM practices. Moreover, described the relationship among staff involvement in decision-making and business performance in the manufacturing sector of Saudi Arabia.</p> <p>Methodology: questionnaires were disseminated among managers and employees working in the manufacturing industry of Saudi Arabia.</p> <p>Future Recommendations: In addition to the manufacturing sector, future research should concentrate on the servicing sector. Future research should also consider the size and age of</p>

	<p>organizations and their effect on the involvement of workers in decisions making.</p>
[40]	<p>Citations: 12</p> <p>journal/conference: journal</p> <p>Findings: findings showed that in Chinese industrial firms, the participation of middle managers in decision making has a positive effect on an organization's innovation performance.</p> <p>Methodology: The proposed model was described.</p> <p>Future Recommendations: no</p>
[10]	<p>Citations: 72</p> <p>journal/conference: journal</p> <p>Findings: Employees with a greater level of participation in decision making PDM were usually more satisfied with their jobs.</p> <p>Methodology: Data was collected through an online web survey method.</p> <p>Future Recommendations: no</p>
[20]	<p>Citations: 65</p> <p>journal/conference: journal</p> <p>Findings: there is a direct and an indirect relationship among participatory decision-making processes and firm performance.</p> <p>Methodology: Quantitative research. Data were collected from the following industries; food, paper, agriculture, communication, textile, pharmaceutical chemical, printing, electronics, software, services, and real estate.</p> <p>Future Recommendations: Future studies should target public companies in order to get a better understanding.</p>

[41]	<p>Citations: 14</p> <p>journal/conference: journal</p> <p>Findings: employee' participation in decision making increases organizational productivity and employee commitment to work.</p> <p>Methodology: Four points Likert scale is used to collect the feedback of respondents.</p> <p>Future Recommendations: no</p>
[18]	<p>Citations: 3</p> <p>journal/conference: journal</p> <p>Findings: The involvement of workers in decision-making has an important influence on organizational efficiency. The role of employees has positive effects on employee behavior, motivation, and productivity.</p> <p>Methodology: Data were collected from different levels of employees working in an organizations</p> <p>Future Recommendations: no</p>
[6]	<p>Citations: 18</p> <p>journal/conference: journal</p> <p>Findings: Different dimensions of Organizational Learning Capability (including Participative decision making PDM).</p> <p>Methodology: Quantitative research</p> <p>Future Recommendations: no</p>
[16]	<p>Citations: 3</p> <p>journal/conference: journal</p> <p>Findings: Male engineers show more participation in decision making as compared to female engineers</p>

	<p>Methodology: Data collected from 336 respondents who participated to fill the survey. 3.6% were females and 96.4% were males among them.</p> <p>Future Recommendations: no</p>
[30]	<p>Citations: 135</p> <p>journal/conference: journal</p> <p>Findings: There is a vigorous connection between employee engagement in decision-making and organizational outcomes. A significant difference between the outputs of companies whose employees' engagement in decision making is deep as compared to those companies whose employee's engagement in decision-making was low.</p> <p>Methodology: Data was created through questionnaires on employee engagement in decision making and performance variables and distributed to manufacturing companies.</p> <p>Future Recommendations: Cover service industry as well along with manufacturing industry</p>
[42]	<p>Citations: 42</p> <p>journal/conference: journal</p> <p>Findings: 1) Positive link between decision quality and productivity of teams. (2) The strategic personnel and preparation tools given to team members have a positive impact on decision-making quality and the efficiency of teamwork.</p> <p>Methodology: Data were gathered from project administrators who had insight into dispersed groups.</p> <p>Future Recommendations: no</p>

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

According to the author research design is a major plan identifying the procedures and methods for analyzing and collecting the needed data [43]. There are two major types of research, known as descriptive research and explanatory research. Current study is conducted by examining the employees and new product development teams who work in Pakistan's software houses. The design and data analysis of the entire research project is purely centered on a quantitative approach, so that individuals can comply with the analytical unit of this research project. In order to explain hypotheses, analysis is used called inferential analysis. It explains details about the cause and effect relationship among variables and allows researchers to draw a conclusion from a sample about sample population [17]

The purpose of this research project is to examine the relationship between employee participation in decision making by management and organization performance in terms of product performance in the software industry of Pakistan. The research is quantitative in nature and closed ended questions will be asked.

3.2 Data collection

The data will be collected through questionnaires from the sample population for this study. A survey consisting of different questions that will be used to collect the data that will help in testing the proposed hypothesis. Respondents will be software/computer engineers (software developers) and their team leads/managers working in software organizations. The questionnaire has three parts in it. The first and the second part will be filled by a software developer and the third part will be filled by the team lead/manager. In the first part, which is the demographic part, personal details about the respondents will be collected. The given information in this section will contain age, gender, and educational qualification. In the second part there are questions related to each variable like level of participative decision making and job satisfaction of employee will be given and Likert five-point scale as shown below in the table is used to get the rating against each question. In the third part there are questions related to the product performance and its dimensions will be given and it will be filled by team

lead/ managers. The sample population will be asked to rate each item to the degree to which they agree or disagree with that item on the basis of their personal experience with the currently working organization. The first part will be conducted to know who the responder is, the second and the third part will shed some light on the variables of this study. Any response that indicates that the responder is unemployed will not be considered. The reason for not considering them is to have reliable data coming from respondents who are currently working.

Primary data is used in current research. The reason of using primary data collection method is that primary data are directly collected from the targeted respondents. According to [43] primary data is exactly collected for concluding the project at hand. For quantitative research, the collection of Primary data will be done through questionnaires provided by researcher and surveys.

3.3 Questionnaire design

The survey form is intended to promote the process of completing the questionnaire from the targeted respondents. Closed-ended questions are therefore used and questionnaires are required to be collected in simple and clear English Language. Phrases must be brief and reasonably descriptive. To ensure reliability and validity of the adapted questionnaire. The development of items in questionnaires involves rigorous testing but due to time and cost restrictions of making entirely new questionnaires, the researchers often adapt existing questionnaire that were published in good journals to better fit the aim of their study. In every section of the questionnaire survey, specific guidelines will be given to lead the respondents.

As discussed earlier, the questionnaires have been designed into three sections; the first is the collection of demographic data for the respondents and the properties of their organizations; the second is the collection of data from the PDM of the individual respondents; the remain section is used to find out the level of Participative decision making PDM with respect to its outcome variable; job satisfaction of employee and product performance. Sections other than the first section required the respondents to assess their agreement/disagreement on items on the five-point Likert scale (1=strongly disagree, 3= neutral, 5= strongly agree).

Section one used to collect demographic information from respondents. Gender, age, education qualification, are the relevant questions in the first section. In the second section, the Participative decision making PDM level of employees in their respective

Software industry is captured. In the third and the last section, the PDM's outcomes are collected such as job satisfaction and product performance.

The questionnaire will be designed in a free online survey which is also known as Google forms and the generated link is posted to the internet survey tool, for respondents to fill up. Hardcopies of the questionnaires will also be distributed if there is a short of number of responses at the end.

3.3.1 Measurement Scales

A scale is an ongoing range or series of categories which is usually quantitatively represented. [43] Defines measurement scale as any number of questions which are arranged gradually according to value, in accordance with their quantification, and which reflect the characteristics of the measured items. Four measuring scales, known as nominal scale, ordinal scale, interval scale and ratio scale, are widely performed. In this study, the research will measure the research questionnaire with a nominal scale and an ordinal scale.

A nominal scale is the measurement scale from a statistical point of view. A nominal scale is just the placement of data into some categories, without any specific order or some predefined structure. In this study, the nominal scale measured is mainly to collect the demographic details of respondents, such as gender and education experiences.

Ordinal scale is also known as ranking scale. The investigators typically ask the respondent to classify objects or alternatives by magnitudes, for example most satisfied to least satisfied, strongly agree to strongly disagree and etc. On the basis of subjective scale, there is no impartial distance between two points. The ordinal scale is used in this study to measure respondent's age, and other variables like level of Participative decision making, PDM of employees, job satisfaction of employees and product performance.

Likert Scale is basically an ordinal scale as well. It helps respondents to choose their options. It is most commonly used five-point scale for study questionnaires. The five point likert scale for respondents was also used in this research project. The respondents chose from the five alternative options: strong disagreement, disagreement, neutrality, agreement and strong agreement on each statement.

Options	Class
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

Table 3.1: Scale used in the questionnaire

3.4 Sampling Design

Sampling requires some techniques and methods. According to [43]. Sampling technique involves number of items or segments of a population in order to infer with respect to the population. For this research, the following sections will address the target population, sample size and sampling technique.

3.4.1 Target Population

The target population is a particular group of people that are important for the research project. The target population in this research project includes those employees who meet following criteria; respondents must be Pakistani and have been employed in the software industry and their firms must be in Pakistan. The questionnaires will be distributed among software houses in Islamabad, Rawalpindi and wah cantt. The questionnaire will be distributed both by email and by hand.

3.4.2 Sample Size

Sample size refers to the number of respondents participated in completing the survey. In consideration of the time and cost constraints, the active respondents from 200 online questionnaires were taken into account. Questionnaires are also divided equally between men, and women working in the software industry of Pakistan. For instance, if the ratio of men is 70% and women is 30% in any software house, the questionnaire is divided equally among them.

3.4.3 Sampling Technique

The method of sampling technique chosen for current research study is a simple random sampling technique that is classified under the category of random sampling technique. Random sampling means that a great number of respondents are collected easily and cost-effectively and each member from the population has equal probability from a

population (Raziq and Maulabakhsh 2015) The questionnaires are distributed equally and the collection of samples are available for the analysis and that the necessary details can be given.

3.5 Data Analysis

There are few methods for analyzing data in this topic. Data from respondents is collected, filtered and then translated into quantitative information. Then, by using many forms of data processing methods, quantitative data can be more interpreted. The findings of the study promote researchers' knowledge to understand more about the data and justify the hypothesis. The data will be analyzed using Statistical Package for Social Sciences (SPSS). The software program of the SPSS allows researchers to systematically measure and analyze the quantitative data. Descriptive analysis, inferential analysis and reliability analysis are used in this study. The validity and reliability of the results will also be checked on SPSS. Cron-batch Alpha, Correlation, Regression and reliability tests will also be performed.

3.5.1 Descriptive analysis

In order to summarize and presenting the required information related to population or quantitative description, descriptive statistics can be used. It describes simply about the data like what the data shows, in order to simplify large amounts of data in a most suitable way. In order to be easier to interpret the statistics through the researcher the distribution can be displayed in the form of a pie, bar, and line chart and others. For example, there is a shared table for the overall sample size of human demographic details of respondents constructed such as the average age, rationale gender, etc.

In this research study, respondent's demographic details and general data is analyzed using tables. The demographic information details of each respondent would be presented straight through the frequency distribution table. The frequency distribution is a set of data that is organized in a way by sum up the entire data in the total number of times a particular value of a variable happens [43].

3.5.2 Inferential analysis

Inferential analyses use mathematical solutions to reach results that spread beyond instantaneous data alone, apart from descriptive research. Current statistics are also used to compare two or more groups in a single calculation to see if there is a difference

in average results. In inferential analysis the process include hypothesis testing and developing estimates on the basis of hypothesis.

In order to obtain the effects in a presentable way, statistical techniques such as t-test or ANOVA should be taken into account when compared with the average output of two groups or above. In t tests, for instance, the mean and standard deviation of the marks for two groups of students sample population can be measured and compared.

3.5.3 Reliability analysis

Reliability of the questionnaire has been tested through Cronbach's Alpha in order to investigate the level it is being consistent with what it is supposed to be measuring. Higher range of coefficients means there is strong correlation exist between two variables which results in greater reliability in the results of the research. For this purpose, there are different coefficient ranges of alpha given and besides each range strength of association is linked. For instance, 0.80 of alpha coefficient range shows that it produces 80% consistencies in the overall scores. The coefficient range and their strength of association is shown below.

Alpha Coefficient Range	Strength of Association
Less than 0.6	Poor
0.6-0.7	Moderate
0.7-0.8	Good
0.8-0.9	Very Good
0.9 and above	Excellent

Table 3.2: Ranges of alpha

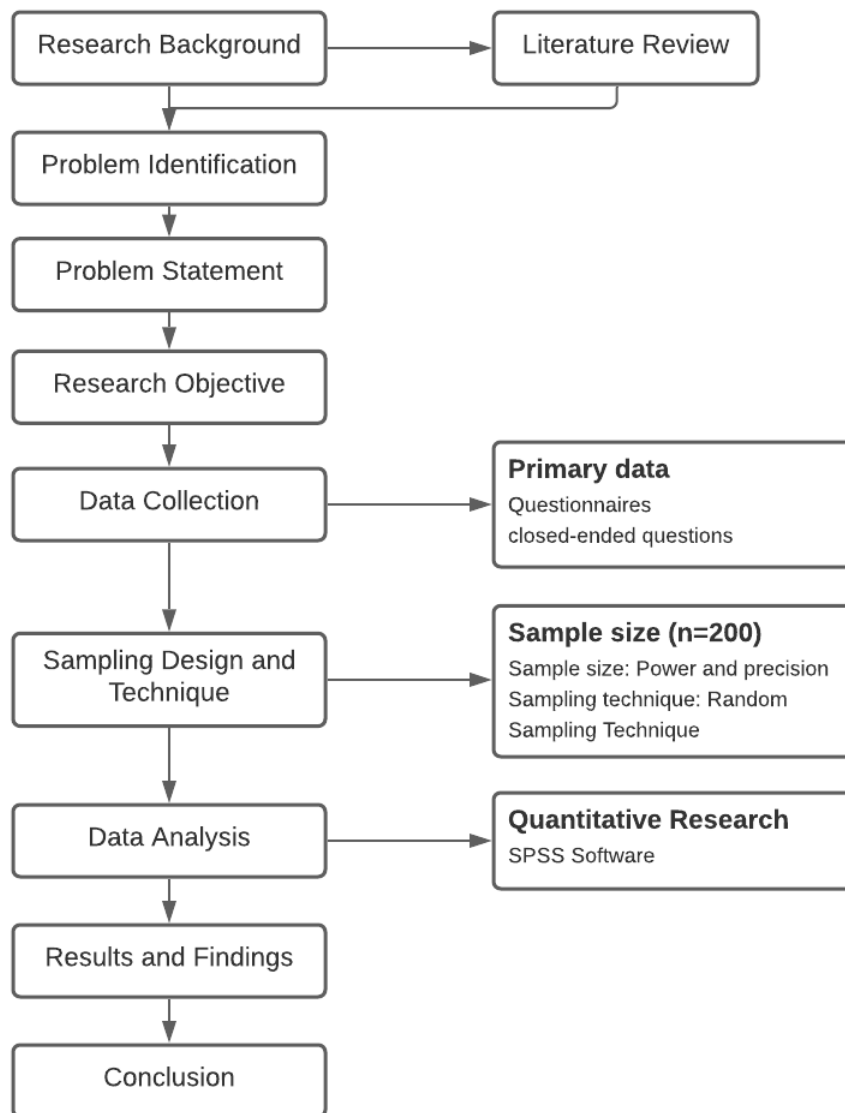


Figure 3.1: Research Methodology

CHAPTER 4:

DATA FINDINGS AND ANALYSIS

Introduction

In present study, data collection involves employees working in software industry of Pakistan. On the basis of collected data, reliability, descriptive statistics, T-test, correlation and regression analysis have been applied to analyze the data.

4.1 Data Analysis

4.1.1 Descriptive Frequencies

In this research the collected data has grouped into different classes so that it is easier to understand. The particular sample size consists of different groups which are shown below. The different group contains the following information such as, what is the gender of the respondent, what is respondent's age and what is their education.

Demographics		Frequencies	Percentages	Cumulative Percentage
Gender	Male	156	78	78
	Female	44	22	100
Age	Below 25 years	53	26.5	26.5
	25 – 35 years	77	38.5	65
	36 – 45 years	38	19	84
	46 – 55 years	19	9.5	93.5
	Above 55 years	13	6.5	100
Education	PhD	31	15.5	15.5
	Master's Degree	68	34	49.5
	Bachelor's	101	50.5	100
	Degree			

Table 4.1: Frequency distribution

Out of 200 respondents, based on gender, 156 respondents having percentage of 78 were males. Whereas, 44 respondents having percentage of 22 were females. Based on age, 53 respondents having a percentage of 26.5 have their age below 25 years. Whereas, 77 respondents having a percentage of 38.5 have their age between 25 – 35 years. However, 38 respondents having a percentage of 19 have their age between 36 – 45 years. Similarly, 19 respondents having a percentage of 9.5 have their age between 46 – 55 years. However, 13 respondents having a percentage of 6.5 have their age above 55 years. Based on education, 31 respondents having a percentage of 15.5 were PhD. Similarly, 68 respondents having a percentage of 34 were having master’s degree. However, 101 respondents having a percentage of 50.5 were having bachelor’s degree.

4.1.2 Reliability Analysis

Reliability of the structured questionnaire has been tested through Cronbach’s Alpha in order to investigate the level it is being consistent with what it is supposed to be measuring. The questionnaire is said to be more reliable if it has lesser variations upon repeated interval measurements. How dependable the questionnaire is, how consistent its questions are and how related it is also to measure the reliability of the instrument. Internal consistency reliability will be considered higher if the coefficient of reliability is closer to 1. Below is the result of Cronbach’s Alpha reliability test of structured questionnaire used within this research.

Variable	Cronbach's Alpha	N of Items
Level Of PDM (LOP)	.637	5
Product Performance (PP)	.681	10
Job Satisfaction (JS)	.702	5

Table 4.2: Reliability Statistics

The reliabilities of level of PDM, product performance and job satisfaction are 0.637, 0.681 and 0.702 respectively. The values of Cronbach’s Alpha shown by reliability statistics are 0.637, 0.681 and 0.702 respectively, which are highly acceptable in terms of our study. Value of Cronbach’s Alpha has given indication of higher consistency and reliability possessed with the questionnaire that is used in this research study for data

collection. Values of Cronbach’s alpha are 0.637, 0.681 and 0.702 respectively, which are very close to 1 demonstrating high reliability associated with the questionnaire used within this research study and data collected through the questionnaire.

4.1.3 Independent Sample T-Test for H1, Employee’s Gender

Independent sample t-test is performed for identifying the significant difference amongst male and female employees with the level of Participative decision making. Based on the findings of Independent sample t-test, H1 will be accepted or rejected.

Gender Employee	N	Mean	Std. Deviation	Std. Error Mean
Male	156	3.0865	.83618	.09926
Female	44	3.2315	.70691	.07985

	F	Sig	t	df	Sig (2-tailed)
Equal variances assumed	2.132	.137	-1.306	121	.141
Equal variances not assumed			-1.425	119.210	.138

Table 4.3: Independent sample t-test

Based on the findings of independent sample test (Levene’s Test for Equality of Variances), F value is 2.132 and the value in the Sig. column is 0.137. Significant value is greater than 0.05 indicating that variability amongst male and female employees is almost the same. Findings reveal that variability within two different groups of employees is not significantly different.

Independent sample t-test indicates whether there exists a significant difference amongst two groups or not. Based on the result, the significant value (2-Tailed) is 0.138

which is greater than 0.05. Hence, it has proved that there exists no statistical difference amongst male and female groups' PDM.

4.1.4 One Way ANOVA for H2, Age Group of Employees

One way ANOVA test is executed in the software to identify whether there is a major difference amongst 5 different age groups of employees. Based on the findings of ANOVA, H2 will be accepted or rejected.

	N	Mean	Std. Deviation	Std. Error Mean
Employees younger than 25 years	53	2.8750	.85177	.13468
Employees between 25 – 35 years	77	3.4138	.76947	.10104
Employees between 36 – 45 years	38	3.4207	.65103	.12089
Employees between 46 – 55 years	19	3.0182	.60172	.11027
Employees older than 55 years	13	2.8521	.57192	.10269

Table 4.4: one way ANOVA for H2

Findings of ANOVA shows the means and standard deviation of 5 age groups of employees and their relationship with PDM. Based on the findings of ANOVA, employees older than 55 years have the lowest PDM mean. In comparison to employees older than 55 years, employees having age less than 25 years and having age between 25 – 55 years have higher PDM mean.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.172	4	3.870	5.852	.001
Within Groups	71.075	196	.505		
Total	78.247	200			

Findings of ANOVA includes F test. The 4 and 196 are the two values of degree of freedom (df) for the between groups (effect) and the within-groups (error), respectively. 5.852 is an obtained F ratio, and the $p > 0.01$ is the probability of obtaining that F ratio by chance alone.

Referring to the findings, $F(4, 196) = 5.852$. F ratio is significant. Result shows that $p = 0.001$ which is less than 0.05. Because of $p < 0.05$, employees having higher age have more effect on PDM. Findings of ANOVA reveal that hypothesis 2 is accepted.

4.1.5 One Way ANOVA for H3, Employees' Education

The one-way analysis of variance (ANOVA) is used to determine whether there is any statistically significant differences between the means of two or more groups. One way ANOVA is performed in this research to identify whether there is a significant difference between employees' education. Based on the findings of ANOVA, H3 will be accepted or rejected. The findings and interpretations of the test are shown below.

	N	Mean	Std. Deviation	Std. Error Mean
PhD	31	3.2719	.71926	.15581
Master's Degree	68	3.4018	.72279	.09791
Bachelor's Degree	101	3.1028	.84182	.12735

Table 4.5: one way ANOVA for H3

Findings of ANOVA shows the means and standard deviation of 3 education groups of employees and their relationship with PDM. Based on the findings of ANOVA, employees having bachelor's degree have lowest PDM mean. In comparison to employees having bachelor's degree, employees having master's degree and PhD have higher PDM mean.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.821	5	2.719	4.017	.003
Within Groups	76.826	195	.591		
Total	83.647	200			

Findings of ANOVA includes F test. The 5 and 195 are the two values of degrees of freedom (df) for the between groups (effect) and the within-groups (error), respectively. 4.017 is an obtained F ratio, and the $p > 0.01$ is the probability of obtaining that F ratio by chance alone. Referring to the findings, $F(5, 195) = 4.017$. F ratio is significant. Result shows that $p = 0.003$ which is less than 0.05. Because of $p < 0.05$, employees having higher education have more effect on PDM. Findings of ANOVA reveal that hypothesis 3 is accepted.

4.2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LOP	200	2.18	5.00	0.1872	.47812
PP	200	1.84	5.00	0.6462	.54921
JS	200	1.24	5.00	0.3285	.48192

Table 4.6: Descriptive Statistics

The above table provides the information which is sufficient to observe all variables of research study in context of its mean value. On the basis of descriptive statistics, mean values of level of PDM, product performance and job satisfaction are 0.1872, 0.6462 and 0.3285 respectively. Starting with the variable of level of PDM, level of PDM has the mean of 18.72 percent with 47.81 percent of (sd) standard deviation. This recommends that level of PDM is impacting product performance and job satisfaction with the mean of 18.72 percent. Whereas, product performance has the mean of 64.62 percent with 54.92 percent of standard deviation. This suggests the product performance change as a result of a level of PDM by 54.92 percent. However, job satisfaction has the mean of 32.85 percent with 48.19 percent of standard deviation. This suggests the job satisfaction change as a result of a level of PDM by 32.85 percent. No mean value is closer to +ve or -ve extreme. Though, mean value for product performance has been the highest and mean value for level of PDM has been the lowest.

4.3 Correlation Analysis

Two variables relationship strength is termed as correlation. Correlation is considered high when the strength amongst the relationship of two variables is on the higher side. Whereas, correlation is considered low when the strength amongst the relationship of two variables is on the lower side. However, moderate correlation exists in case of moderate strength of relationship existing amongst two variables. The range of correlation-coefficient is between -1 to +1. Pearson r (also known as correlation coefficient) is mostly used for assessing the relationship between multiple variables.

		LOP	PP	JS
LOP	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	200		
PP	Pearson Correlation	.458	1	
	Sig. (2-tailed)	.000		
	N	200	200	
JS	Pearson Correlation	.439	.485	1

Sig. (2-tailed)	.000	.000	
N	200	200	200

Table 4.7: Correlation

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The analysis indicates the relationship that exists between level of PDM and product performance is significant with the magnitude of .458 and in a positive direction. However, the relationship that exists between level of PDM and job satisfaction is significant with the magnitude of .439 and in a positive direction. Similarly, the relationship that exists between product performance and job satisfaction is significant with the magnitude of .485 and in a positive direction.

4.4 Regression Analysis

Regression gives an indication of the relationship between dependent and independent variables and the extent of relationship between them. Below are the results of linear regression analysis.

4.4.1 Relationship between Level of PDM on Product Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.597 ^a	.356	.341	.58162	1.625

a. Predictors: (Constant), LOP

Table 4.8: Regression Analysis for H4

Variance in dependent variable (product performance) caused as a result of predicting variable (level of PDM) is represented by R-square. The R Square value in the model shows that level of PDM accounted for 35.6% variance in product performance. Also, the range of R square lies between 0-1 so, it indicates that perfect positive linear association exists between two variables. In simple words, R^2 gives an indication of the extent to which “product performance” can be explained by “level of PDM”. The acceptable range for Durbin Watson value is between 0 – 4. However, 1.625 is the

Durbin Watson value, which is highly acceptable [46]. On the other hand, Adjusted R² shows how fit the theoretical model has been. So, when it comes to this study, Adjusted R² is 34.1% fit.

ANOVA

	Model	Sum of Squares	Df	Mean Square	F	Sig.
	Regression	4.781	6	4.629	18.272	.000 ^b
1	Residual	78.142	95	.372		
	Total	82.923	101			

a. Dependent Variable: PP

b. Predictors: (Constant), LOP

Based on the findings of ANOVA, F value in the model is more than 4 and significance value is less than 0.05. Therefore, it has been obvious that the model is statistically significant.

Coefficient

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	1.108	.232		3.872	.001
1	LOP	.479	.089	.472	2.719	.001

a. Dependent Variable: PP

Above table shows the level of PDM has a significant impact on product performance. In the model, significance value of level of PDM for product performance is less than 0.05 which shows that there is a significant relationship between them. Product performance (b=0.479) is significant and the coefficient is positive which would indicate that high product performance is related to high level of PDM.

4.4.2 Relationship between Level of PDM on Job Satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.621 ^a	.386	.370	.50192	1.841

a. Predictors: (Constant), LOP

Table 4.9: Regression Analysis for H5

Variance in dependent variable (job satisfaction) caused as a result of predicting variable (level of PDM) is represented by R-square. The R Square value in the model shows that level of PDM accounted for 38.6% variance in job satisfaction. In simple words, R^2 gives an indication of the extent to which “job satisfaction” can be explained by “level of PDM”. The acceptable range for Durbin Watson value is between 0 – 4. However, 1.841 is the Durbin Watson value, which is highly acceptable [46]. On the other hand, Adjusted R^2 shows how fit the theoretical model has been. So, when it comes to this study, Adjusted R^2 is 37.0% fit.

ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	2.285	2	3.173	14.749	.000 ^b
	Residual	62.853	97	.304		
	Total	65.138	99			

a. Dependent Variable: JS

b. Predictors: (Constant), LOP

Based on the findings of ANOVA, F value in the model is more than 4 and significance value is less than 0.05. Therefore, it has been obvious that the model is statistically significant.

Coefficient					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.052	.221		3.471	.002
1 LOP	.326	.062	.322	2.545	.001

a. Dependent Variable: JS

Above table shows the level of PDM has a significant impact on job satisfaction. In the model, significance value of level of PDM for job satisfaction is less than 0.05 which shows that there is a significant relationship between them. Job satisfaction (b=0.326) is significant and the coefficient is positive which would indicate that high job satisfaction is related to high level of PDM.

4.5 Data Findings

Hypothesis 1 was ‘Male software developers show significant difference in PDM compared with female software developers’ has been rejected in independent sample t-test. Independent sample t-test reveals that male software developers have no significant difference in PDM compared with female software developers, rejecting H₁.

Hypothesis 2 was ‘senior software developers show more participation in PDM as compared with junior software developers’ has been accepted in one way ANOVA. One way ANOVA has proved that senior software developers show more participation in PDM as compared with junior software developers, accepting H₂.

Hypothesis 3 was ‘Software developers with higher education qualification show higher level of PDM’ has been accepted in one way ANOVA. One way ANOVA has proved that developers with higher education qualifications show higher level of PDM, accepting H₃.

Hypothesis 4 was ‘There is a positive relationship between participative decision making and product performance’ has been accepted in correlation and regression analysis. In correlation analysis, level of PDM is related positively with product performance has been proved highly significant with the magnitude of .458. In

regression analysis, the findings of the analysis proved that there is a significant relationship between level of PDM and product performance, which clearly shows that an increase in level of PDM increases the product performance and vice versa.

Hypothesis 5 was ‘There is a positive relationship between participative decision making and job satisfaction’ has been accepted in correlation and regression analysis. In correlation analysis, level of PDM is positively related with job satisfaction has been proved highly significant with the magnitude of .439. In regression analysis, the findings of the analysis proved that there exists a significant relationship between level of PDM and job satisfaction, which clearly shows that an increase in level of PDM increases the job satisfaction and vice versa.

Hypothesis	Statement	Results
H1	Male developers show significant difference in PDM compared with female developers.	Rejected
H2	Senior software developers show more participation in PDM as compared with junior software developers.	Accepted
H3	Senior developers with higher education qualification show higher level of PDM.	Accepted
H4	There is a positive relationship between participative decision making and product performance.	Accepted
H5	There is a positive relationship between participative decision making and job satisfaction.	Accepted

Table 4.10: Results of Hypothesis

4.6 Discussion

This research study has aimed to assess the relationship between level of PDM, product performance, and job satisfaction in the software industry of Pakistan. In this study, the level of PDM is considered as the mediating variable. Whereas, product performance and job satisfaction are used as the dependent variables. Meanwhile, the software industry of Pakistan is the sector chosen for investigating the relationship between the above mentioned variables. In order to collect responses from the respondents, an adoptive structured questionnaire is used. Independent sample t-test reveals that male software developers have no significant difference in PDM compared with female developers, rejecting H₁. Whereas, one way ANOVA has proved that senior software developers show more participation in PDM as compared with junior software developers, accepting H₂. Similarly, one way ANOVA has proved that software developers with higher education show a higher level of PDM, which results in accepting H₃. So, more qualified employees show more participation in decision making than others. According to hypothesis 4, there is a positive relation between participative decision making and product performance. So, on the basis of above hypothesis, it is observed that the person having more qualification, participates in decision making which lead to the healthy product development. However, to test the acceptance and rejection of hypotheses, a predefined scale was set to 5% of the significance level for this study. Based on the level of significance, the hypothesis (H₄ and H₅) would be examined. Such as, a significant level of PDM for product performance and job satisfaction is less than 0.05. So, H₄ and H₅ (which were developed in accordance with theoretical framework) are accepted and proved significant. To test the relationship, level of PDM was empirically tested with product performance & job satisfaction and found positive correlation between them. Also, the analysis of correlation has clearly shown that level of PDM is positively correlated with product performance and job satisfaction with the magnitude of .458 and .439. Additionally, by performing regression analysis, the findings has revealed a significant relationship between level of PDM and product performance & job satisfaction, outcome variables. Based on the findings of this study, level of PDM has a positive impact on product performance and job satisfaction in the software industry of Pakistan.

CHAPTER 5

DISCUSSIONS AND CONCLUSION

5.1 Introduction

This chapter is related to discussion and conclusion. The content in this particular chapter includes discussion of results, limitations and future recommendations and finally the conclusion of the study.

5.2 Discussion

In this study, the aim is to assess the relationship between demographic variables with level of PDM, and then with product performance, and job satisfaction in the software industry of Pakistan. In context of analysis of the data, with respect to the hypotheses and research questions mentioned in the first and second chapter of the study, following results and interpretations can be drawn. In this study, the level of PDM is considered as the mediator. Whereas, product performance and job satisfaction are considered as the dependent variables. Meanwhile, the software industry of Pakistan is the sector chosen for investigating the relationship between the above mentioned variables. To gather responses from the respondents (employees working in the software industry of Pakistan), an adoptive structured questionnaire is used.

Analyses revealed that male software developers have no significant difference in PDM compared with female software developers. Also, it has proved from the findings that senior software developers show more participation in participative decision making as compared with junior software developers, accepting the hypothesis. Similarly, one way ANOVA has proved that software developers with higher education qualification show higher level of PDM.

Analyses also revealed a significant positive relationship between level of PDM and product performance and similarly with job satisfaction. To conclude, Based on the findings of this study, the level of PDM has a positive impact on product performance and job satisfaction in the software industry of Pakistan.

5.3 Limitations and Future Recommendations

The current survey is limited to three cities of Pakistan (Islamabad, Rawalpindi and wah cantt). Employees and Team leads of only software houses were researched. The research context is limited to Islamabad and Rawalpindi based software houses due to

inadequate resources. However, future studies can extend to other cities of Pakistan to get more significant results.

Future studies may need to expand to cover the manufacturing industry and other industries as well rather than limiting them to the software industry, so that generalization of the results and findings might be well justified. Moreover, Impact of top management support and working environment on project success is another area of research that impacts product performance and it is suitable for future research relevant to the relationship between Top management and project Success. Future research needs to explore the factors that are involved in the working environment and impact the relationships between manager and employee and performance respectively.

5.5 Conclusion:

In this research, it is concluded that employees (Male/female) who worked in the software industry have no significant difference in their participation in decision-making (PDM). Employees are interested and allowed to participate in decision making. Based on the analysis, employee's age and academic qualifications are the main significant factors that affect employee participation in decision-making PDM. Older workers in an organization or more trained staff prefer to give their workplaces a higher degree of participation in decision-making PDM. It is also concluded from this research project that the job satisfaction of employees and the product performance are connected with the participation in decision-making (PDM). Higher levels of participation in decision-making PDM can increase the satisfaction of both workers and organization. The findings also show that most of the software developers were satisfied with their participation in decision making during the time of new project development. Recognition and Opportunities were equally given to them to express and share their ideas, as well as get them involved in certain discussions regarding project development. As a result, they gave full support, involvement and contribution to the organization. For Pakistan software industry, this is an essential knowledge. This is because workers who are smarter and more efficient at the workplace can do better and more happy at work. Moreover, more dedicated employees appear to be satisfied with their job and to be able to lower the turnover rate of employees.

REFERENCES

- [1] B. Scott-Ladd and V. Marshall, "Participation in decision making: a matter of context?," *Leadersh. Organ. Dev. J.*, vol. 25, no. 8, pp. 646–662, Dec. 2004, doi: 10.1108/01437730410564988.
- [2] A. Behzadpur, S. J. Tabibi, L. Najafi, A. Poornajaf, M. Ghiyasi, and Y. Hamidi, "The role of effective information in decision making by managers at Shahid Beheshti of teaching hospitals of Shahid Beheshti university of medical sciences," *Aust. J. Basic Appl. Sci.*, vol. 5, pp. 2453–2457, 2011.
- [3] S. H. Appelbaum, D. Louis, D. Makarenko, J. Saluja, O. Meleshko, and S. Kulbashian, "Participation in decision making: a case study of job satisfaction and commitment (part one)," *Ind. Commer. Train.*, vol. 45, no. 4, pp. 222–229, Jun. 2013, doi: 10.1108/00197851311323510.
- [4] T. M. Probst, "Countering the Negative Effects of Job Insecurity Through Participative Decision Making: Lessons From the Demand-Control Model," *J. Occup. Health Psychol.*, vol. 10, no. 4, pp. 320–329, 2005, doi: 10.1037/1076-8998.10.4.320.
- [5] E. Sofijanovska and V. Zabijakin-Chatleska, "Employee involvement and organizational performance: evidence from the manufacturing sector in Republic of Macedonia," presented at the The International Scientific Conference "Business and Regional Development," Trakia University, Bulgaria, 2013, Accessed: May 22, 2019.
- [6] M. Nezam, A. Attafar, A. Isfahani, and A. Shahin, "Human Capital and New Product Development Performance Efficiency- The Mediating Role of Organizational Learning Capability," *Int. J. Learn. Dev.*, vol. 3, p. 79, Feb. 2014, doi: 10.5296/ijld.v3i6.4564.
- [7] P. Carbonell and A. I. Rodríguez-Escudero, "The individual and joint effects of process control and process-based rewards on new product performance and job satisfaction," *BRQ Bus. Res. Q.*, vol. 19, no. 1, pp. 26–39, Jan. 2016, doi: 10.1016/j.brq.2015.04.001.
- [8] D. Kandemir and N. Acur, "Examining Proactive Strategic Decision-Making Flexibility in New Product Development," *J. Prod. Innov. Manag.*, vol. 29, no. 4, pp. 608–622, 2012, doi: <https://doi.org/10.1111/j.1540-5885.2012.00928.x>.
- [9] O. Meleshko, D. Makarenko, J. Saluja, S. Kulbashian, D. Louis, and S. H. Appelbaum, "Participation in decision making: a case study of job satisfaction and commitment (part two)," *Ind. Commer. Train.*, vol. 45, no. 6, pp. 352–358, Sep. 2013, doi: 10.1108/ICT-09-2012-0048.
- [10] D. W. V. D. Westhuizen, G. Pacheco, and D. J. Webber, "Culture, participative decision making and job satisfaction," *Int. J. Hum. Resour. Manag.*, vol. 23, no. 13, pp. 2661–2679, Jul. 2012, doi: 10.1080/09585192.2011.625967.
- [11] N. Hoboubi, A. Choobineh, F. Kamari Ghanavati, S. Keshavarzi, and A. Akbar Hosseini, "The Impact of Job Stress and Job Satisfaction on Workforce Productivity in an Iranian

- Petrochemical Industry,” *Saf. Health Work*, vol. 8, no. 1, pp. 67–71, Mar. 2017, doi: 10.1016/j.shaw.2016.07.002.
- [12] K. Ugwu, L. I. Okoroji, and E. Oluchi Chukwu, “Participative Decision Making and Employee Performance in the Hospitality Industry: A Study of Selected Hotels in Owerri Metropolis, Imo State,” *Manag. Stud. Econ. Syst.*, vol. 4, no. 1, pp. 57–70, Jan. 2019.
- [13] G. Pacheco and D. Webber, “Participative decision making and job satisfaction,” *Int. J. Hum. Resour. Manag.*, vol. 23, Jan. 2010, doi: 10.1080/09585192.2011.625967.
- [14] A. Yassine and K. Chelst, “Engineering Management Decision Making Using the Decision Analysis Paradigm,” May 2019.
- [15] A. Alsughayir, “Employee Participation in Decision-making (PDM) and Firm Performance,” *Int. Bus. Res.*, vol. 9, p. 64, May 2016, doi: 10.5539/ibr.v9n7p64.
- [16] R. Hashim and S. Wok, “Levels of Engineers Participative Decision-Making in Tenaga Nasional Berhad,” *Asian Soc. Sci.*, vol. 11, no. 17, p. p130, Jun. 2015, doi: 10.5539/ass.v11n17p130.
- [17] K. S. Ting, “The level and effects of Participation in Decision Making (PDM) on employee groups for the manufacturing andservicing sectors in Malaysia, 2012. /paper/The-level-and-effects-of-Participation-in-Decision-Ting/083027797b2def295433b142b94c05204d3dc8e2 (accessed Jan. 14, 2021).
- [18] O. Cross and C. Daniel, “Impact of Employee Participation on Decision Making In Nigerian Banking Sector,” pp. 14–20, Feb. 2019, doi: 10.9790/487X-2102051420.
- [19] Y. Y. Wong, I. H.-S. Chow, V. P. Lau, and Y. Gong, “Benefits of team participative decision making and its potential to affect individual creativity,” *J. Appl. Soc. Psychol.*, vol. 48, no. 7, pp. 369–376, 2018, doi: <https://doi.org/10.1111/jasp.12517>.
- [20] A. Carmeli, M. Yitzack Halevi, and Z. Sheaffer, “Does participatory decision-making in top management teams enhance decision effectiveness and firm performance?,” *Pers. Rev.*, vol. 38, no. 6, pp. 696–714, Sep. 2009, doi: 10.1108/00483480910992283.
- [21] T.-S. Han, H.-H. Chiang, and A. Chang, “Employee participation in decision making, psychological ownership and knowledge sharing: mediating role of organizational commitment in Taiwanese high-tech organizations,” *Int. J. Hum. Resour. Manag.*, vol. 21, no. 12, pp. 2218–2233, Oct. 2010, doi: 10.1080/09585192.2010.509625.
- [22] M. Valverde-Moreno, M. Torres-Jimenez, and A. M. Lucia-Casademunt, “Participative decision-making amongst employees in a cross-cultural employment setting: evidence from 31 European countries,” *Eur. J. Train. Dev.*, vol. ahead-of-print, no. ahead-of-print, Jan. 2020, doi: 10.1108/EJTD-10-2019-0184.
- [23] A.-C. Thore Olsson, U. Johannesson, and R. Schweizer, “Decision-making and cost deviation in new product development projects,” *Int. J. Manag. Proj. Bus.*, vol. 11, no. 4, pp. 1066–1085, Jan. 2018, doi: 10.1108/IJMPB-02-2018-0029.

- [24] A. I. Rodríguez-Escudero, P. Carbonell, and J. L. Munuera-Aleman, "Positive and Negative Effects of Team Stressors on Job Satisfaction and New Product Performance*," *J. Prod. Innov. Manag.*, vol. 27, no. 6, pp. 856–868, 2010, doi: <https://doi.org/10.1111/j.1540-5885.2010.00756.x>.
- [25] P. Carbonell and A. I. Rodríguez-Escudero, "Management control, role expectations and job satisfaction of new product development teams: The moderating effect of participative decision-making," *Ind. Mark. Manag.*, vol. 42, no. 2, pp. 248–259, Feb. 2013, doi: [10.1016/j.indmarman.2012.08.007](https://doi.org/10.1016/j.indmarman.2012.08.007).
- [26] Y. Noah, "A Study of Worker Participation in Management Decision Making Within Selected Establishments in Lagos, Nigeria," *J. Soc. Sci.*, vol. 17, no. 1, pp. 31–39, Jul. 2008, doi: [10.1080/09718923.2008.11892631](https://doi.org/10.1080/09718923.2008.11892631).
- [27] K. Bremser and M. del M. Alonso-Almeida, "Does gender specific decision making exist?," *EuroMed J. Bus.*, vol. 10, no. 1, pp. 47–65, May 2015, doi: [10.1108/EMJB-02-2014-0008](https://doi.org/10.1108/EMJB-02-2014-0008).
- [28] S. Garib Singh and G. Singh, "A Study on employee participation in decision making," vol. 5, May 2019.
- [29] C. Grimpe, W. Sofka, M. Bhargava, and R. Chatterjee, "R&D, Marketing Innovation, and New Product Performance: A Mixed Methods Study," *J. Prod. Innov. Manag.*, vol. 34, no. 3, pp. 360–383, 2017, doi: <https://doi.org/10.1111/jpim.12366>.
- [30] L. O. Kuye and A. A.-H. Sulaimon, "Employee involvement in decision making and firms performance in the manufacturing sector in Nigeria," *Serbian J. Manag.*, vol. 6, no. 1, pp. 1–15, 2011, doi: [10.5937/sjm1101001K](https://doi.org/10.5937/sjm1101001K).
- [31] D. W. Irawanto, "Employee participation in decision-making: evidence from a state-owned enterprise in Indonesia," *Manag. - J. Contemp. Manag. Issues*, vol. 20, no. 1, pp. 159–172, 2015.
- [32] J. Alegre and R. Chiva, "Assessing the impact of organizational learning capability on product innovation performance: An empirical test," *Technovation*, vol. 28, no. 6, pp. 315–326, Jun. 2008, doi: [10.1016/j.technovation.2007.09.003](https://doi.org/10.1016/j.technovation.2007.09.003).
- [33] D. Fields and J. Elele, "Participative decision making and organizational commitment: Comparing Nigerian and American employees," *Cross Cult. Manag. Int. J.*, vol. 17, no. 4, pp. 368–392, Oct. 2010, doi: [10.1108/13527601011086586](https://doi.org/10.1108/13527601011086586).
- [34] O. Elegbe and F. Ibikunle, "Effective Communication and Participative Decision-Making in selected Organizations in Ibadan metropolis," *Afr. J. Stab. Dev.*, vol. 9, p. 2015, Jan. 2015.
- [35] D. Makarenko, D. Louis, S. H. Appelbaum, O. Meleshko, J. Saluja, and S. Kulbashian, "Participation in decision making: a case study of job satisfaction and commitment (part three)," *Ind. Commer. Train.*, vol. 45, no. 7, pp. 412–419, Sep. 2013, doi: [10.1108/ICT-09-2012-0049](https://doi.org/10.1108/ICT-09-2012-0049).
- [36] K. S. Ting, "The level and effects of Participation in Decision Making (PDM) on employee groups for the manufacturing and servicing sectors in Malaysia," 2012. .

- [37] A. Zubair, M. Bashir, M. Abrar, S. A. Baig, and S. Y. Hassan, "Employee's Participation in Decision Making and Manager's Encouragement of Creativity: The Mediating Role of Climate for Creativity and Change," *J. Serv. Sci. Manag.*, vol. 08, no. 03, Art. no. 03, May 2015, doi: 10.4236/jssm.2015.83033.
- [38] X. Yao and R. Askin, "Review of supply chain configuration and design decision-making for new product," *Int. J. Prod. Res.*, vol. 57, no. 7, pp. 2226–2246, Apr. 2019, doi: 10.1080/00207543.2019.1567954.
- [39] N. C. P, O. S. Abomeh, O. C. M, and M. N. M, "Impact of Participatory Decision Making on Organisational Goal Attainment," *Int. J. Bus. Econ. Manag.*, vol. 6, no. 1, pp. 1–15, 2019, doi: 10.18488/journal.62.2019.61.1.15.
- [40] H. Cheng, F. Song, and D. Li, "How middle managers' participation in decision-making influences firm innovation performance: Evidence from China Employer–Employee Survey Data," *Chin. Manag. Stud.*, vol. 11, no. 1, pp. 72–89, Feb. 2017, doi: 10.1108/CMS-12-2016-0253.
- [41] M. O. Agwu and H. E. Olele, "Perception Survey of Employees Participation in Decision Making and Organizational Productivity in Julius Berger Nigeria PLC Bonny Island," *J. Econ. Manag. Trade*, pp. 620–637, Jan. 2014, doi: 10.9734/BJEMT/2014/5938.
- [42] N. Drouin and M. Bourgault, "How organizations support distributed project teams: Key dimensions and their impact on decision making and teamwork effectiveness," *J. Manag. Dev.*, vol. 32, no. 8, pp. 865–885, Aug. 2013, doi: 10.1108/JMD-07-2012-0091.
- [43] W. G. Zikmund, *Business research methods*. Mason, OH: Thomson/South-Western, 2003.
- [44] A. Raziq and R. Maulabakhsh, "Impact of Working Environment on Job Satisfaction," *Procedia Econ. Finance*, vol. 23, pp. 717–725, Jan. 2015, doi: 10.1016/S2212-5671(15)00524-9.
- [45] M. Jantan, Aizzat Mohd Nasurdin, and Nur Fitriah Ahmed Fadzil, "Designing Innovative Organizations in Malaysia: Do Structure and Culture Matter?," *Glob. Bus. Rev.*, vol. 4, no. 2, pp. 213–226, Aug. 2003, doi: 10.1177/097215090300400201.
- [46] W. Wu, C. Chiang, and J. Jiang, "Interrelationships between TMT management styles and organizational innovation," *Ind. Manag. Data Syst.*, vol. 102, no. 3, pp. 171–183, Jan. 2002, doi: 10.1108/02635570210421363.
- [47] D. M. Kennedy, R. R. Vozdolska, and S. A. McComb, "Team Decision Making in Computer-Supported Cooperative Work: How Initial Computer-Mediated or Face-to-Face Meetings Set the Stage for Later Outcomes*," *Decis. Sci.*, vol. 41, no. 4, pp. 933–954, 2010, doi: 10.1111/j.1540-5915.2010.00293.x.

APPENDIX

QUESTIONNAIRE

Section 1: Respondents Demography, to be filled by employees/ Software developers

Gender	1	Male
	2	Female
Age	1	Below 25
	2	25-35
	3	36-45
	4	46-55
	5	Above 55
Education Qualification	1	Doctorate degree
	2	Master's Degree
	3	Bachelor's Degree

Section 2: Participative decision making

How much do you agree or disagree with each of the following statements about the decision making of the project development in your organization.

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

	Statements	1	2	3	4	5
1	In my workplace, My boss involves employees in decision making during product development.					
2	In my workplace, I talk freely with my supervisors.					
3	In my workplace, My supervisors are receptive and listens to my idea and suggestions.					
4	In my workplace, Workers are trusted to use good judgment in decision making					
5	In my workplace, staff are encouraged to get involved in setting work goals.					

Job satisfaction

	Statements	1	2	3	4	5
1	Are you satisfied with the recognition you get for your work on the project.					
2	Are you satisfied with the way the team was managed.					
3	Are you satisfied with the amount of responsibility given to you during the project?					
4	Are you satisfied with the opportunities given to you to use your knowledge and capabilities?					
5	Are you satisfied with the freedom given to you to perform your job.					

Section 3: Product Performance, (To be filled by Team lead/ managers)

	Statements	1	2	3	4	5
If your team participates in decision making of product, then you think your product is:						
1	More reliable than competing products available to the customer.					
2	The product's performance meets our expectations.					
3	Our clients are very satisfied with this product.					
During the Development process						
4	The team made efficient use of its time.					
5	The team did a good job of meeting all of its schedule deadlines					
6	The team's project was within the budget.					
The new product:						
7	Met sales expectations					
8	Met profit expectations					
9	Met return on investments expectations					