

A Feasibility Study of Dual Display on Commercial Counters

Manisha. A. Vhora, Research Student, SIOM, Pune, manishavhora@gmail.com

Dr.Dhananjay T. Mandlik, Research Guide, SIOM, Pune, 100djay@gmail.com

ABSTRACT

Displaying and maintaining information to the users perspective and Managing, organizing, controlling all elements and tools in predictive model, in order to broaden our horizon of corporate and practice work on Technology field.

Production companies can expand this Bidirectional display unit as technology by creating their screen set ups with ease and low cost. Bidirectional display unit will be useful for referring data as well to enhance productivity. Bidirectional display unit framework can be viewed digitally and viewing simultaneously.

Keywords:Dual, display, Bidirectional, Technology

1. INTRODUCTION

In the digital world, the word ‘technology’ has a broader meaning which includes invention, innovation, research and development, technology strategies and its implementation, technology planning, technology forecast, technology absorption, technology transfer, and technology management. In the contemporary time period, every technology imaginable to human mind has an integral digital dimension. Present day technocrats are conversant with the intricacies of systems development and their business applications. Essentially trained in information technology as well as the management philosophy, they are capable of deploying technology to achieve optimization of organizational goals. Technology is the key aspect of scientific and engineering growth of an organization. Nowadays Visual computing technologies innovating large number of applications related to dual / multiple display systems. In future, users will be supporting this feature, mainly because of display of different images to viewers. Viewers can view these images in different directions. Secondly Multiple-display viewing can greatly enhance user perception.

2. RESEARCH PROBLEM

The flexibility of dual display unit can provide multi-tasking which will be easier and which will be able to use both screen and monitors simultaneously. It provides dual images in which user can show a client sitting across him which he will be viewing an image that the user is viewing. This gives convenience and plug-in to the user.

Considering today's scenario we need to utilize the present devices optimum ally with minimum cost. Optimum utilization can be done by saving energy with fullest / maximum efficiency for dual view display unit with capacity of Information Technology management.

3. SIGNIFICANCE OF THE STUDY

Researcher feels the need to utilize the present devices to the fullest extent and with minimum cost trying to come up with the solution that shall significantly benefit the people at large. Optimum utilization can be done by saving energy with fullest or maximum efficiency for dual view display unit with capacity of Information Technology management.

4. OBJECTIVES

Following objectives are framed for the research study:

To understand prospective problems in designing dual way display of LED screen

To study the features of dual display unit in present scenario

5. RESEARCH METHODOLOGY

Research is a process of systematically gaining accurate answers to significant and pertinent questions with the practice of scientific methods of collecting and understanding information and data.

The researcher has made the statement that designing a prototype of dual display unit will help the regular user to use the display unit in both the way. Formative research aims that to improvement in familiarity with a phenomenon or to obtain new insight in order to formulate a more precise problem by developing a hypothesis in exploratory studies.

This research highlights the capability of using dual or multiple monitor. It also shows the interface with which we could connect the monitors. It gave an interface using which transmission of multi-screen or dual screen monitors in commercial become feasible. To suit the

requirement of end users during the demonstration of the products transmission capabilities and adaptability feature must be effectively concentrated. This prototype proof of concept simulates the dual screen monitor display. Therefore exploratory research design is adopted.

Sources and Methods of Data Collection:

Data collection was broadly done under the following two categories namely: Primary data was collected either through experiment or through survey. And Secondary data is collected from the existing researches, write-ups and research projects done by some researchers earlier on the topic which may have some commonalities with the existing research.

Sampling and Sample Size:

The aim of this study is to gain an initial understanding of the different experiences and beliefs of respondents concerning the business model concept. To achieve this within the constraints of the study, it is important to achieve a high level of diversity in the sample.

Therefore **a purposive or judgmental sampling** strategy allows the researcher to construct a sample as appropriate to the research aim.

Researcher covered IT industries in Pune City. In Pune city there are approximately 273 registered IT industries and 74 web development companies. Researcher approached 26 companies. Out of them 18 companies were situated in Hinjewadi, Pune participated in the research survey

In total, 487 respondents like system analysts, software developers, technical analysts, team leaders and end users of system were participated in this process. Altogether **416 respondents** filled the questionnaire completely. These responses received were finally considered for the final data analysis.

6. HYPOTHESES OF THE STUDY

Researcher has put across the following Hypotheses:

There is statistical significant relationship between unidirectional display and inconvenience faced by end users.

7. REVIEW OF RESEARCH PAPERS

Takayoshi Oshino, SusurnHipasawa and Uxjya Watanabe, Wyohei Ichikawa, OmioGoto¹. In this experiment results that – The I1 terminal has two CRT displays. First is data display screen which is used to control common screen and Second the source list stored in the RAM which is in Pseudo code and program list. Programmer or assembler practices both displays simultaneously. Key-inputted source program is displayed on screen. While processing there is inputted the assembly command then finished program is converted Photograph MES-I1 terminal to the object code. On one screen source list and assembly list is displayed. Combination of a dual display microcomputer set and Television technology. Television is the effective solution to microcomputer education. Cause this is capable of exciting creativity and perseverance in all vital elements of education. Further this advancement is essential to create better teaching materials and hardware.

Cruz-Neira C², written in his research paper Dual headed displays have become extensively obtainable. Projectors with a brightness of 1000 lumens are affordable and prices keep reducing. Propositions create openings for designing augmented surfaces also called electronic interactive surfaces. Today's offices Multi-monitor, multi-display system extends their screens as primary to secondary display system.

The Experimental research by BahramJavidi, Sung-Wook Min', Byoungcho Lee³, writes in their article that - integral imaging or integral photography is a favourable three dimensional in 3D display technique. While providing auto stereoscopic images having both horizontal and vertical parallax which does not require any special glasses. Also he suggests using multiple display panels and lens arrays new methods of enhancing integral 3D imaging.

¹SusurnHipasawaand, Uxjya Watanabe,Takayoshi Oshino, Wyohei Ichikawa, OmioGoto 1979 IEEE "A Microcomputer Based Educational System (MES) With Dual Display",CH1465- 4/79/0000-0442

²Cruz Neira 1992. *The CAVE: Audio visual experience in automatic virtual environments.* (6) *Communication of the ACM* p. 64-72

³BahramJavidi, Sung-Wook Min, Byoungcho Lee 2001 IEEE *Enhanced 3D Color Integral Imaging using Multiple Display Devices, Applied Optics* Vol 42,Issue 20, 0-7803-7105-4/01/2001

Research work on PC based distributed multiple displays by Ming Dar Kuo, Chin-Chen Chang, Wu-Jeng Li, Ken- Yuan Hsu, Der Lor⁴, focuses on Virtual reality. It is regarding human interaction with dynamic computer generated virtual environments. VR started from system infrastructure, hardware interfaces, input devices, channels, simple applications. CAVE system successfully distributed virtual reality system among PC based multiple displays. CAVE system developers easily illustrate virtual reality applications and build virtual worlds at much lower cost.

MountazHascoet, Frederic Sackx⁵, written in research paper that there is heterogeneous wall screen in a dual-headed display. In this user needs to transfer his main focus to related peripheral information. Several users can share peripheral information which have been organized, discussed and shared. Here Researcher proposes three different design strategies. First is to manipulate the information second organization of the space between two display services and lastly Overview and filter details on command.

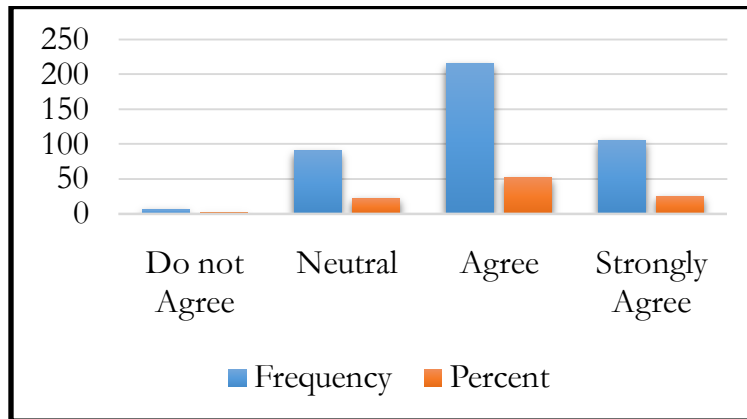
8. DATA ANALYSIS AND INTERPRETATIONS

8.1 Requirement of an Additional Screen for Laptop / LED during Demo

	Frequency	Percent	Valid %	Cumulative %
Do not Agree	6	1.4	1.4	1.4
Neutral	90	21.6	21.6	23.1
Agree	215	51.7	51.7	74.8
Strongly Agree	105	25.2	25.2	100.0
Total	416	100.0	100.0	

⁴ Ming Dar Kuo, Chin-Chen Chang, Wu-Jeng Li, Ken- Yuan Hsu.2001. A PC-based distributed multiple display Virtual Reality system, *Displays*, 22 177-181.

⁵MountazHascoet, FredericSackx 2002. IEEE. Exploring interaction strategies with Wall screen a new dual display device for managing collections of web pages. 1093-9547/02

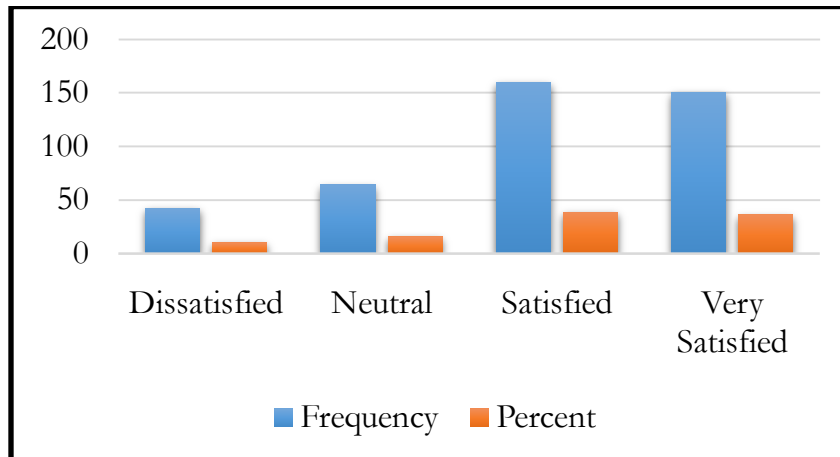


Interpretation -

From the above analysis researcher observed that, out of the 416 respondents, 6 respondents i.e. 1.4% did not agree about the requirement of additional screen for laptop / led during demos. 90 respondents i.e. 21.6% were neutral about this requirement. 215 respondents i.e. 51.7% agreed for it and 105 respondents i.e. 25.2% strongly agreed about the requirement of additional screen for laptop / led during demos.

8.2 Multi Display Screen

	Frequency	Percent	Valid %	Cumulative %
Dissatisfied	42	10.1	10.1	10.1
Neutral	64	15.4	15.4	25.5
Satisfied	160	38.5	38.5	63.9
Very Satisfied	150	36.1	36.1	100.0
Total	416	100.0	100.0	

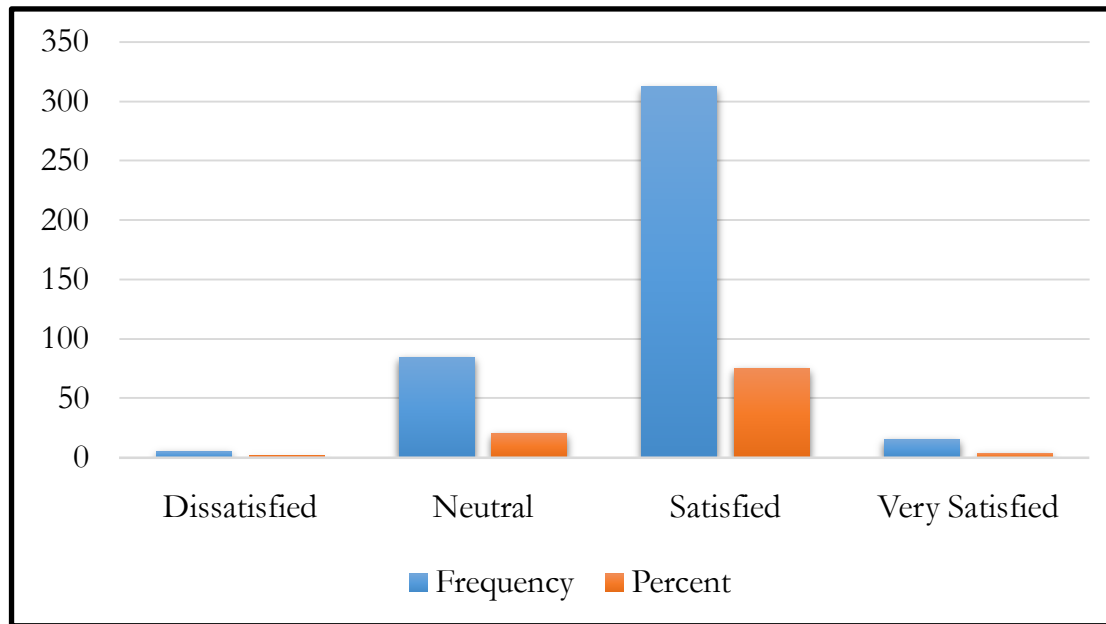


Interpretation -

The above graph depicts that, out of the 416 respondents, 42 respondents i.e. 10.1% were dissatisfied about the use of multi display screen during the demo. 64 respondents i.e. 15.4% were neutral about it. 160 respondents i.e. 38.5% agreed that they were satisfied with the multi display screen during demo. Even 150 respondents i.e. 36.1% were very satisfied with use of multi display screen during the demo.

8.3 Bidirectional Screen on Both Sides

	Frequency	Percent	Valid %	Cumulative %
Dissatisfied	5	1.2	1.2	1.2
Neutral	84	20.2	20.2	21.4
Satisfied	312	75.0	75.0	96.4
Very Satisfied	15	3.6	3.6	100.0
Total	416	100.0	100.0	

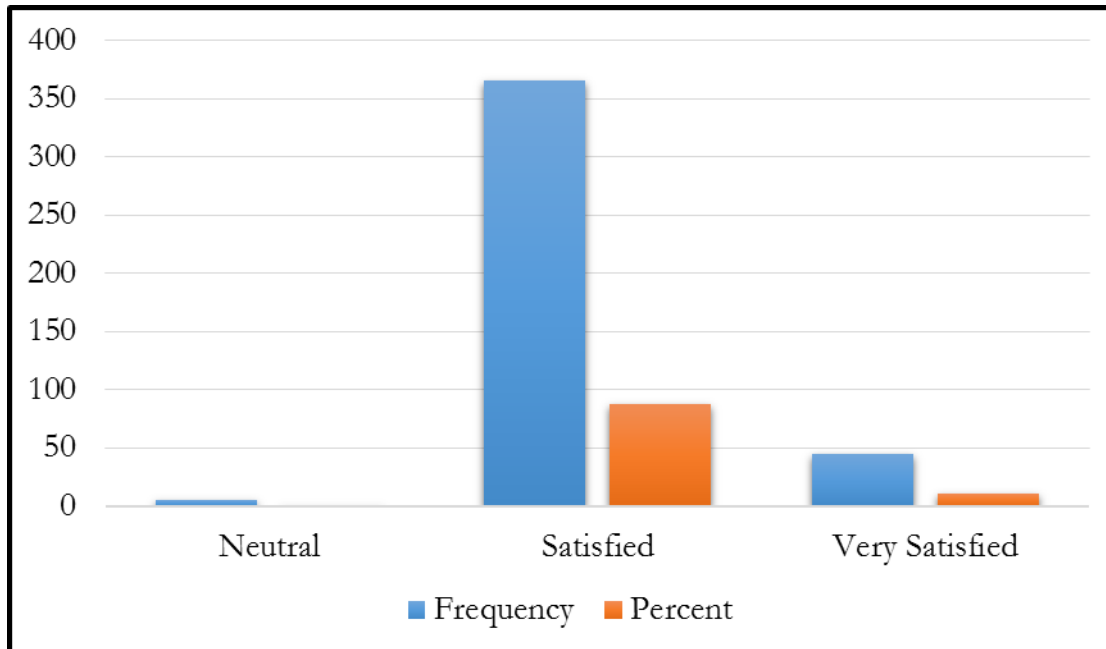


Interpretation -

It is clear from the graph that, out of the 416 respondents, 5 respondents i.e. 1.2% were dissatisfied about the use of bidirectional screen on both sides during the demo. 84 respondents i.e. 20.2% were neutral regarding the use of bidirectional screen during the demo. 312 respondents i.e. 75 % were happy to use the bidirectional screen during demo. 15 respondents i.e. 3.6% were very satisfied about the use of bidirectional screen during demo.

8.3 Multi display screen with effect, use, resolution etc. is more effective

	Frequency	Percent	Valid %	Cumulative %
Neutral	5	1.2	1.2	1.2
Satisfied	366	88.0	88.0	89.2
Very Satisfied	45	10.8	10.8	100.0
Total	416	100.0	100.0	

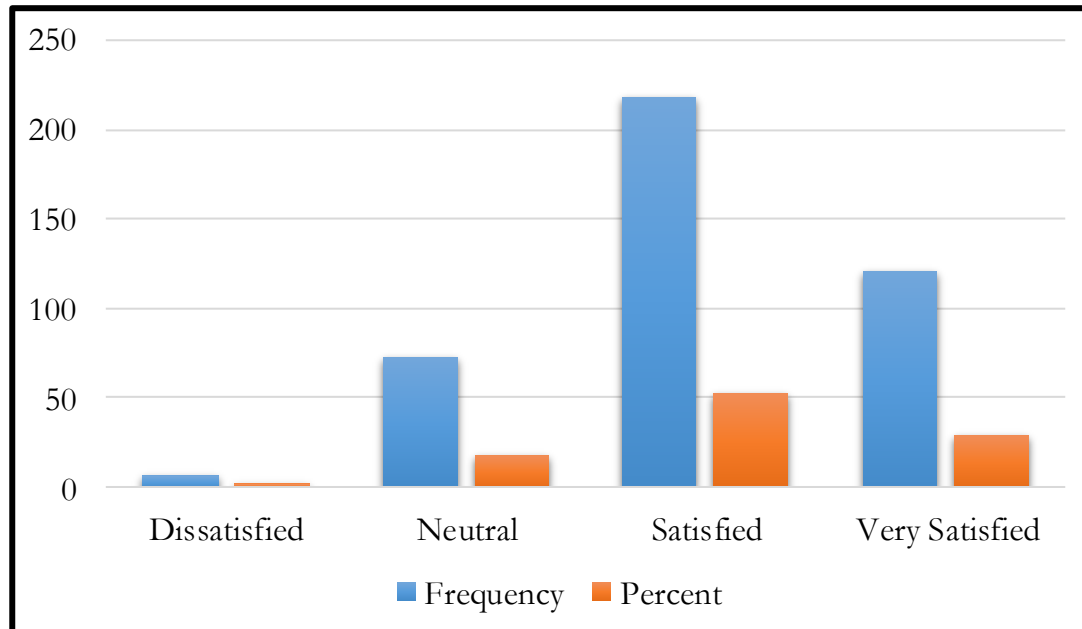


Interpretation -

From the above analysis researcher observed that, out of the 416 respondents, 5 respondents i.e. 1.2% stayed neutral. But total 411 respondents i.e. 98.8% were satisfied about the effect, use and resolution of multi display screen during demo.

8.4 Bi-Directional Screen or Development Will Resolve Your Problem

	Frequency	Percent	Valid %	Cumulative %
Dissatisfied	6	1.4	1.4	1.4
Neutral	72	17.3	17.3	18.8
Satisfied	218	52.4	52.4	71.2
Very Satisfied	120	28.8	28.8	100.0
Total	416	100.0	100.0	

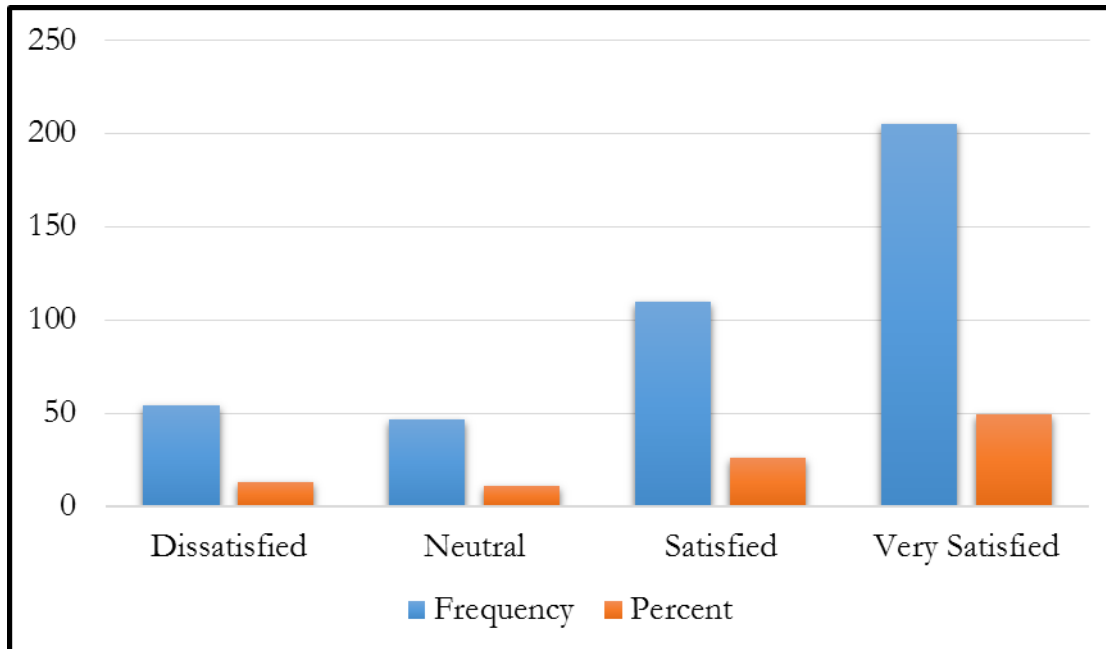


Interpretation -

From the above analysis researcher observed that, out of the 416 respondents, 6 respondents i.e. 1.4% didn't think that, bi-directional screen or development will resolve the problems that may arise during demo. 72 respondents i.e. 17.3% were neutral about it. But 218 and 120 respondents i.e. 52.4% and 28.8% were found to be satisfied and opined that the problems that may arise during demo can get resolved with the use of bi-directional or development in it.

8.5 Availability of New Product is in the Market, it Changes the Perception of Users

	Frequency	Percent	Valid %	Cumulative %
Dissatisfied	54	13.0	13.0	13.0
Neutral	47	11.3	11.3	24.3
Satisfied	110	26.4	26.4	50.7
Very Satisfied	205	49.3	49.3	100.0
Total	416	100.0	100.0	

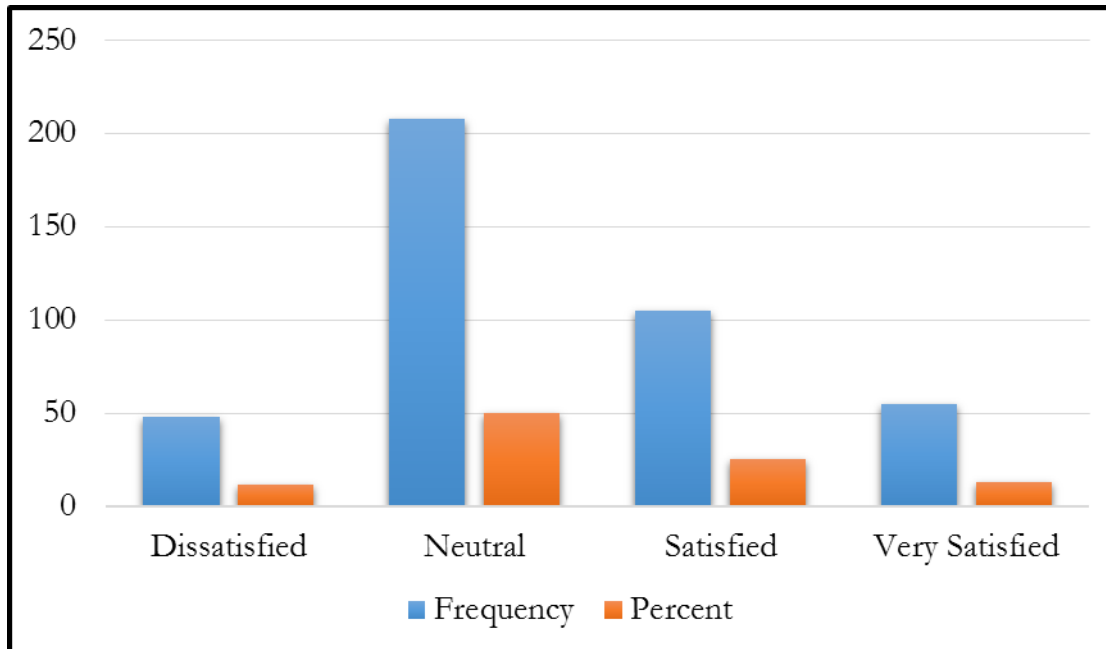


Interpretation -

From the above analysis researcher observed that, out of the 416 respondents, 54 respondents i.e. 13 % did not agree that, such new product in bi-directional screen will change the perception of the user. 47 respondents i.e. 11.3% were neutral on it. 110 respondents i.e. 26.4% were satisfied and agreed that the new product in bi-directional screen will change the perception of the user. Even 205 respondents i.e. 49.3% strongly think that the perception of the user will change definitely due to such new product in bi-directional screen during the demo.

8.6 Extent of Innovation in Bi-Directional Product Development

	Frequency	Percent	Valid %	Cumulative %
Dissatisfied	48	11.5	11.5	11.5
Neutral	208	50.0	50.0	61.5
Satisfied	105	25.2	25.2	86.8
Very Satisfied	55	13.2	13.2	100.0
Total	416	100.0	100.0	



Interpretation -

From the above graph it is crystal clear that, out of the 416 respondents, 48 respondents i.e. 11.5% did not agree and were dissatisfied though bi-directional product development is innovative. 208 respondents i.e. 50% were neutral about it. But total 160 respondents i.e. 38.4% were satisfied and agreed that idea of bi-directional product development is an innovation.

9. OBSERVATIONS

In the research study it has been observed that –

1. From the analysis researcher observed that, above an average respondents agreed that unidirectional displays were inconvenient for shoppers. Some found that the unidirectional display consumes space of counters, technology of unidirectional displays as out-dated also many were unable to make any comment on it.

Considering this fact for studies, average respondents agreed on the needs to be updated in the unidirectional displays. Also felt that unidirectional displays have an ease of access.

Research studies show that, to improvise the work facilities, the study of display unit application is an essential aspect.

1. Respondents opined that making of bi-directional screen useful to customers was a challenge to them, but the idea of bi-directional product development is an innovation.

They were ready to convert their present display screen with the bi-directional screen or ready to purchase such bi-directional product for their use.

2. There is statistically significant relationship between conceptual framework of new product of bidirectional display and expectations of end users.

Following key conclusions are drawn from the findings of the study:

Rapid changes in the field of information technology make it possible to develop a new unit to enhance the portability of user.

Creating awareness among the youth and end user gives new perspective to the global world.

There is significant relationship between conceptual frameworks and improvisation of work facilities.

There is significant relationship between conceptual framework of new product of bidirectional display and expectations of end users.

There is significant relationship between unidirectional display and inconvenience faced by end users.

There is significant relationship between successful commercialization of bidirectional displays and expectations of end users.

10. SCOPE FOR FURTHER STUDY

Researcher proposes some of the statements for further research based on present study. The studies mentioned below on Bidirectional Unit Production may help to take on the development horizon. Analytical study of various phases of design, coding and development of android application is required.

REFERENCES

- i. Ming Dar Kuo, Chin-Chen Chang, Wu-Jeng Li, Ken- Yuan Hsu.2001. A PC-based distributed multiple display Virtual Reality system, Displays, 22 177-181.
- ii. B.S. Sonde (2001). Transducers and Display Systems. 2nd Edition, New Delhi, Tata McGraw-Hill Publishing Company Ltd.
- iii. BahramJavidi, Sung-Wook Min, Byoungcho Lee 2001 IEEE Enhanced 3D Color Integral Imaging using Multiple Display Devices, Applied Optics Vol 42, Issue 20, 0-7803-7105-4/01/2001

- iv. Cruz Neira 1992. The CAVE: Audio visual experience in automatic virtual environments. (6) Communication of the ACM p. 64-72
- v. David Simon (2002). An Embedded Software Primer.
- vi. James K. Peckol (2009). Embedded System: A Contemporary Design. Wiley India Pvt. Limited, 8126524561
- vii. John M. Yarbrough (2006). Digital logic: Applications and Design, First Edition, Cengage Learning India, 813100586
- viii. Jonathan Valvano (2009). Embedded Microcomputer Systems - Real Time Interfacing. CENGAGE Learning. 978-0-495-41137-6
- ix. Leedy P.D. (1997). Practical research: Planning and Design. 6th Edition, Upper Saddle River, NJ: Prentice-Hall.
- x. MountazHascoet, FredericSackx 2002. IEEE. Exploring interaction strategies with Wall screen a new dual display device for managing collections of web pages. 1093-9547/02
- xi. Rajkamal. (2009). Embedded System Architecture Programming Design. 2nd Edition, New Delhi, Tata Graw Hill Publication.
- xii. Ranjit Kumar (2008). Research Methodology A Step by Step Guide for Beginners. 2nd Edition Pearson Education.
- xiii. Stephen Brown and ZvonkoVranesic (2003). Fundamentals of Digital Logic with VHDL Design. Fourth reprint. New Delhi, Tata McGraw-Hill Publishing Company Ltd.