A STUDY ON CUSTOMERS PERCEPTION AND SATISFACTION WITH VIRTUAL QUEUING AND SERVICING IN CUSTOMER CARE SERVICES OFFERED BY BUSINESSES IN PUNE CITY

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Abstract:
Queues and resulting waits are always resultant of demand and supply imbalance. It is a common experience in physical marketplace both in B2B and B2C scenarios. The algorithm of managing demand and supply in offline and online modes are quite different. The paper deals with issues of queues on different virtual platforms experienced by customers online. The study focuses on awareness, challenges, etc.
Keywords- Customer Perception, Customer Satisfaction, Virtual Queues, Waiting Line Management

1. INTRODUCTION:

Customers experiencing long queues and thus waiting in multiple situations is a common sight. There could be various reasons behind the queue building up. It could be as simple as demand supply imbalance or inaccuracy with planning or execution etc. The current research not only aims to studies the queueing faced by customers but attempts to study it on online platforms. The study acknowledges the emergence, evolution and development of online customer care services provided by different brands. Though this is projected as value addition by the brands but there are queues built up in the process.

1.1 OBJECTIVES:

1. To understand the concept and practice of Virtual Queuing System
2. To find out the awareness level of customers about virtual queuing offered for customer care services
3. To understand the factors supporting Virtual queuing and servicing by firms
4. To analyse the benefits and issues faced by customers during the process of customer care services.
5. To study the comparison between virtual queuing and physical queueing
6. To suggest measures for improvement of customer experience during virtual queues and services.

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1.2 HYPOTHESIS:

Hypothesis 1: Personnel touch is the major significant reason for customers preference for physical queuing

H0: Personnel touch do not influence customers preference for physical queuing

H1: Personnel touch does influence customers preference for physical queuing

Hypothesis 2: Customers prefer virtual queue for ease of convenience over physical queue

H01: Ease of convenience does not influence customer preference for virtual queue

H11: Ease of convenience does not influence customer preference for virtual queue

Hypothesis 3: Virtual queues face biggest challenge of not having right customer care staff

H01: Not having right customer care staff is not a significant challenge for virtual queue

H11: Not having right customer care staff is a significant challenge for virtual queue

1.3 SIGNIFICANCE OF THE STUDY-

There's an attempt to find out the causes behind queue built up and thus to suggest ways to reduce wait times and thus also aim at improving service quality. Further, by ensuring steps to sort quality issues raised by customers' customer loyalty and retention can be achieved. The study can also identify loopholes in communication with customer thus paving way for streamlining. With better customer satisfaction and work issues sorted out employee satisfaction will improve which will be reflected in higher efficiency and effectiveness. Further this leads to reduce operational costs owing to better resources management. Online customer care services help build up customer database and keep it updated. Over all this will lead to better sales and better revenue.

1.4 LIMITATIONS OF THE STUDY-

Major limitations of this study include small sample size, possibility of subjective bias, small time period. The study also faced challenge of non -cooperation from respondents.

2. THEORETICAL BACKGROUND:

2.1 Relevant Definitions:

- Customers' Perception: The opinions, feelings and beliefs that a customer holds about a particular product and /or brand
- Customers Satisfaction: The metric used to describe the feeling of happiness when perception meets expectation
- Virtual Queuing: a system of online waiting for customers for availing service rather physically standing in queue
- Customer Service- assistance and support offered by companies to its customers or prospects before, during or after they buy or use or consume your products
- Quality management-Ensuring consistent performance across all tasks so the product provided meets or exceeds customers' expectations.

2.2 Customers' Perception about Services

Customers develop opinions and feelings about any product be it good or services. These opinions and / or feelings can be attributed to many sources. Some of these are as discussed below:

1. Personal experience- A customer may have come across certain experiences relating to consumption of different products. They get to experience the quality and see the worth of product in relation to quality. With different prices charged by sellers its different grades of product also get established. These personal experiences lead to customers forming opinions about service product, which becomes a basis for further purchase decisions.
2. Societal Indications-Impact of society cannot be overlooked on individuals' choices and adoption of products in their lifestyles. Today in the era connected through social networking people's exposure has increased manifold. Individuals refer to online reviews posted by consumers on different platforms. Apart from this understanding the demographics would also open up windows to understanding consumers and their behavioural projections.
3. Marketing communications – we are living in an era of commercialization where corporates go to long length to prove their product well above the other competitive brands. We are exposed to advertisements across all possible media platforms. These marketing communications form expectations develop certain opinions about the product in question. Further branding also leads to feeling favourable or otherwise for the brand.

2.3 Major Areas of Quality Concern of Customers

Considering quality as subjective depending on customers' preferences the possible areas of quality concern can be many. To simplify the areas of quality concern we can present following categories:

- Technical Quality- This refers to what is provided. It includes systems and infrastructure designed and created to produce and deliver the service. For example: database, machines technical solutions, and know-how.
- Functional Quality- This refers to how the service is delivered. This is more expressive in nature. Functional quality includes employee: attitudes, behavior, service mindedness, appearance, accessibility internal relations and customer contacts.

2.4 Virtual Queueing in Customer Service

How does virtual queuing work? In virtual queueing customer join to avail the service. if the server is occupied with other customers a queue will build up online where customer waits for his turn or can request for a call back.

The benefits of virtual call queuing solutions- Experiencing queues in day-to-day life is a common sight. It's more frustrating for customers to wait for hours in queues to avail products. Even when quality of the products may be good but waiting can really reduce the perception of quality of services. Thus, affecting satisfaction of customers and even leading to loss of customers. Companies realizing the significance of prompt services and keeping customers happy. They have resorted to online customer care services to avoid physical queues leading to annoyance, stress and exhaustion.

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Well designed and executed virtual customer care services helps in reducing the number of abandoned calls. It has been noted that virtual queuing leads to comparatively quick services. Convenience, time saving and customized solutions offered through these virtual assistants leads to increased customer satisfaction

First Contact Resolution (FCR) is a system of measurement that measures a call center's efficacy in resolving customers' problems on their first call. Higher FCR rates mean more satisfied customers and better call center productivity. Virtual queuing systems offer customers one stop solution and maintain the records of the issues for future references. This also means they do not need to register, record or at times re-enter the virtual queues.

2.5 Comparability between Physical and Virtual Queueing

The companies today offered both virtual and physical customer care services. Both the platforms have their own pros and cons. Though the customer service is deemed to be quicker and convenient time and location wise in virtual customer care services, physical customer care services are preferred for the personal touch and satisfaction from a human attending to you face to face.

3. LITERATURE REVIEW:

3.1 Prescription for the Waiting in Line Blues: Entertain, Enlighten, Engage- Richard C. Larson (1991) Waiting in queues is always seen as a reason for dissatisfaction. The study suggested bringing distractions. One important finding was keeping customers informed about waiting was not associated with increase in satisfaction.

3.2 Telephone Call Centers: A Tutorial and Literature Review- Noah Gans* Ger Koole† Avishai Mandelbaum (2002)

Analysis of Customer Patience in a Bank Call Center Paul D. Feigin July 24, 2006- The study focused on finding out factors affecting customers. The study identified patience as a parameter for decision to continue or abandon the queue. Also, the research established if customers are engaged and given a feeling of process initiation before queueing, they will be more patient. Having timely announcements regarding the queue status would be further appreciated by customer but a fault in the system would lead to customer abandoning the queue.

3.3 On Priority Queues with Impatient Customers: Stationery and Time-Varying Analysis (2008)- The study brings out the importance of right staffing in a call centre as overstaffing increases the operational costs whereas the understaffing will lead to increased waits leading to high cost of dissatisfaction. The study describes the call centre as a very complex environment owing to heterogenous customers. Solutions suggested by the authors include effective staffing rules and staff cross training.

3.4 Customer Preferences for Restaurant Technology Innovations, Michael Dixon, Sheryl E. Kimes, Ph.D., and Rohit Verma, Ph.D. (2009)- The research focused on impact of eleven technology innovations in restaurant on customers. The researchers classified these technologies into five groups applicable during one or more phases in restaurant from pre- arrival till post departure: queue management, internet based, menu, kiosks and payment related.

The study found that payment-related technologies were considered less valuable than queue-management technologies. Also, it established restaurateurs must select technology based on suitability and to make customers accept technologies there has to be value addition for them.

3.5 Waiting in Vain: Managing Time and Customer Satisfaction at Call Centers Danilo Garcia1,2, Trevor Archer2, Saleh Moradi2, Bibinaz Ghiabi3 (2012)-.

The study emphasized importance of keeping customers satisfactorily informed and providing quality time of service. Also, the authors emphasize inclusion of important information of dissatisfied customers in the data.

3.6 Queue Management Optimization with Short Message System (SMS) Notification – this paper presents differentiation between invisible queues, visible queues and virtual queues. Invisible queues lead to maximum dissatisfaction as the customers do not have cue about length of wait. In visible queues customers are told about approximate waiting time thereby giving them an option to continue or abandon the service thus reducing the frustration. In virtual queues the customers are informed about the wait conditions and are given options to either continue the wait or they can request a call back thus reducing the chances of abandonment and high dissatisfaction. Intimation of waiting time via SMS notification helped bank customers under this study to manage their waiting times according to their choice.

3.7 Queue Management Optimization with Short Message System (SMS) Notification- R Kanesaraj Ramasamy1 and Fang-Fang Chua2 (2012)- The study focused on providing fairness and comfort to the customers while in queue. The researchers worked through SMS notification to build up the queue and update the status of queue movement. Thus, further improving the satisfaction of the customers by allowing them to dedicate themselves into something more productive.

3.8 Analysis of Multiserver Queueing System with Opportunistic Occupation and Reservation of Servers Bin Sun,1,2 Moon Ho Lee,3 Sergey A. Dudin,4 and Alexander N. Dudin4 (2014)

The study reveals that primary customers have preemptive precedence over the secondary customers. If all servers are occupied, but at least one of them provides service to the secondary customer, service of one secondary customer is terminated and the primary customer occupies the server. The forced termination of service of the secondary customers may imply at least two negative consequences: dissatisfaction of the secondary customers by the quality of service and wasting the throughput (bandwidth) due to the loss of some already done work. So, it is desirable to introduce some kind of control by admission of the secondary customers.

3.9 Analytical Call Center Model with Voice Response Unit and Wrap-Up Time- Petr HAMPL (2015)- The study deals with studying the components of call centre customer service. The call centre customer service is divided into different parts. The first part consists of resolving customer issues through IVRs failing which the call is handled by human agents. The handling by human agents is again fragmented into two parts conversation and time and wrap up time. The research shows the significance of inclusion of wrap up time along with conversation time on agent workload unlike other researches done previously.

3.10 Queuing Theory and Customer Satisfaction: A Review of Performance, Trends and Application in Banking Practice (A Study of First Bank Plc Gwagwalada, Abuja Branch) (2015) The research establishes that correct implementation of queueing theory definitely results in better customer satisfaction. The study successfully showed significant improvement in performance of the employees and customer satisfaction with application of efficient queuing system.

3.11 Analysis of a Call Center with Partial Closing Rules, Feedback and Impatient Calls- Yan Chen, Peishu Chen*, Yijuan Zhu (2016)-

The study deals with analysis of calls whether they are abandoned calls or feedback calls and how the customer representatives handle it. The study emphasizes on right placement of the customer service representatives and ensuring no compromises on quality standards. It was observed that with very long waiting time customers prefer abandoning the calls.

4. RESEARCH METHODOLOGY

1. Type of research- This research study is a 'Descriptive' and 'Analytical'.
2. Nature of the study- This research is Quantitative in nature.
3. Parameters of the Study: customer traffic management, unplanned visits, customer wait times, long queues, resources management, impact on staff productivity, customer Friendly Technology, personalized service experience, challenges faced in a virtual queue, Comparison of physical customer queue vs virtual queue, Customers Perception and Satisfaction with Virtual Queuing
4. Research plan for the data collection

a) Primary source of data collection -Survey method

b) Secondary source of data collection- Books, Journals, Published Reports, Related websites etc.

5. Sampling plan-

c) Universe-81% of customers use online chat or live support for communicating with a company. (Customer Service Statistics and Trends (salesforce.com))

d) Sampling units- customers waiting in virtual queues

e) Sample size- 63

f) Sampling Method - Random sampling.

g) Survey period- Data collection was completed during December 2022

6. Statistical Techniques

Descriptive Statistics- Arithmetic Mean

Graphical methods -Bar diagram & Correlation Coefficient

Hypothesis Testing- Chi-square Testing

Type of questionnaire: Structured questionnaire designed using Likert 5 point and 3-point scale.

5. ANALYSIS AND FINDINGS OF THE DATA

Table 1- Demographic Profile

AGE	
Category	Number of Responses

Under 18 Yrs.	0
18- 24 yrs.	17
25-30 Yrs.	15
30-35 yrs.	16
More Than 35 yrs.	15
TOTAL	**63**

GENDER	
Category	**Number of Responses**
Male	36
Female	27
TOTAL	**63**

INCOME	
Category	**Number of Responses**
Up to 2 Lakhs	11
2-5 lakhs	22
5 lakhs & above	30
TOTAL	**63**

Occupation	
Category	**Number of Responses**
Self Employed-Professional	11
Self Employed-Business	3
Service	44
Unemployed	5
TOTAL	**63**

Marital Status	
Category	**Number of Responses**
Married	22
Unmarried	37
Divorced	0
Do not wish to specify	4
TOTAL	**63**

Age- The respondents were in the age category 18- 24 yrs.- 17, 25-30 Yrs.-15, 30-35 yrs.-16 and More Than 35 yrs.- 15.

Gender- out of 63 respondents 27 were females and 36 were males.

Income- 11respondents earn Up to 2 Lakhs, 22 earn 2-5 lakhs, 30 earn 5 lakhs & Above

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Marital Status- 22 respondents were married, 37 respondents were unmarried and 4 respondents do not wish to specify

Education- out of 40 respondents, 18 were graduate and 22 were postgraduate.

Occupation- 11 respondents were Self Employed-Professional, 3 were Self Employed-Business 44 were occupied in Service and 5 were unemployed

Table 2 Experiencing Virtual Queue

Have you anytime experienced Virtual/ Online Queueing in customer care services?	
Category	Number of Responses
YES	51
NO	12
TOTAL	63

Table 2 depicts 81% of customers have experienced virtual queueing.

Table 3 Ranking factors leading to growth of Virtual Queuing

Rank the following factors leading to growth of Virtual Queuing.												
Types of Response	Least Important		Somewhat Not Important		Neutral		Somewhat Important		Most Important		Total	
		%		%		%		%		%		%
To manage customer traffic	4	6.34	2	3.17	11	17.4	14	22.2	32	50.7	63	100
Avoid Unplanned Visits	3	4.7	8	12.6	21	33.3	16	25.3	15	23.8	63	100
On-site customer wait times and reduces walkaways	6	9.5	5	7.9	12	19	18	28.5	22	34.94	63	100
Ease of handling long queues	2	3.17	4	6.34	11	17.4	16	25.3	30	47.6	63	100
Reduction in requirement of resources	3	4.7	7	11.11	19	30	22	34.9	12	19	63	100
Ease of handling customer query and enhance productivity	2	3.17	8	12.6	9	14.2	15	23.8	28	44.4	63	100
Customer Friendly Technology	3	4.7	3	4.7	10	15.8	19	30	28	44.4	63	100

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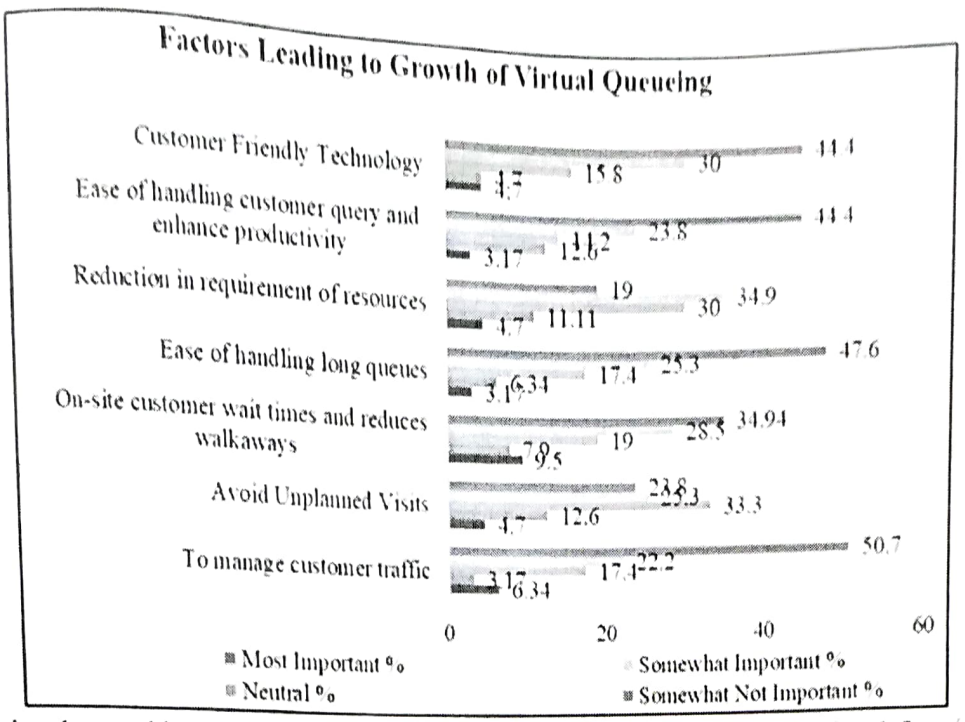
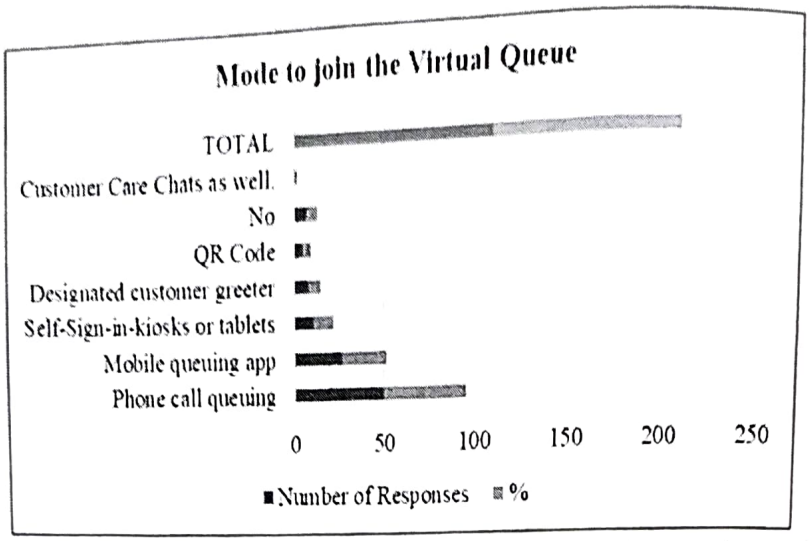


In the above table titled "Rank the following factors leading to growth of Virtual Queuing" respondents opine that most important factors are: To manage customer traffic (50.7%), Ease of handling long queues (47.6%), Ease of handling customer query and enhance productivity (44.44%) and Customer Friendly Technology (44.44%)

Table 4 Mode to join the Virtual Queue

How you have joined a Virtual Queue? (You can tick more than one answer)		
Category	**Number of Responses**	**%**
Phone call queuing	50	45.9
Mobile queuing app	27	24.7
Self-Sign-in-kiosks or tablets	11	10.9
Designated customer greeter	8	7.33
QR Code	5	4.5
No	7	6.4
Customer Care Chats as well.	1	0.9
TOTAL	**109**	100

Fig Mode to join the Virtual Queue



The above table shows majority of the customers join virtual queueing through Phone call queuing (45.9%) followed by Mobile queuing app (24.7%) and only 0.9% prefer customer care chats.

Table 5 Benefits of Virtual Queuing in Order of Importance

Rank the following benefits of Virtual Queuing in order of importance.												
Types of Response	**Least Important**		**Somewhat Not Important**		**Neutral**		**Somewhat Important**		**Most Important**		**Total**	
		%		**%**		**%**		**%**		**%**		**%**
Reduce wait time	3	4.7	10	15.8	12	19	12	19	28	44.44	63	100
Decrease service time	3	4.7	7	11.11	14	22.2	25	39.6	14	22.2	63	100
Enhance customer flow	2	3.17	4	6.34	21	33.3	21	13.3	15	23.8	63	100
Maintain the rules of fair queuing	2	3.17	4	6.34	18	28.5	17	26.9	22	34.94	63	100
Monitor and improve staff performance	0	0	4	6.34	14	22.2	15	23.8	30	47.6	63	100
Offer a more personalized service experience	0	0	7	11.11	12	19	20	31.7	24	38	63	100
Eliminate customer anxiety	3	4.7	8	12.6	17	26.9	19	30.1	16	25.3	63	100
Increase customer satisfaction	2	3.17	6	9.5	13	20.6	17	26.9	25	39.6	63	100
Ready customer data	2	3.17	6	9.5	13	20.6	17	26.9	23	36.5	63	100
Better Communication	3	4.7	4	6.34	19	30.1	16	25.3	21	13.3	63	100

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Convenience to the customer	2	3.17	5	7.9	15	23.8	16	25.3	24	38	63	100
Reduces the number of abandoned calls	3	4.7	6	9.5	16	25.3	22	34.9	16	25.3	63	100
Increases efficiency and first call resolutions	4	6.34	6	9.5	12	19	18	28.5	23	36.5	63	100

The above table depicts in response to ranking the benefits of Virtual Queuing in order of importance, following observations were made:

Majority of the customers ranked following benefits as most important

Reduce wait time- 44.44%

Maintain the rules of fair queuing- 34.94%

Monitor and improve staff performance- 47.6%

Offer a more personalized service experience- 38%

Increase customer satisfaction- 39.6%

Convenience to the customer- 38%

Ready customer data- 36.5%

Increases efficiency and first call resolutions- 36.5%

Majority of the customers ranked following benefits as neutral

Enhance customer flow- 33.3 %

Better Communication- 30.1%

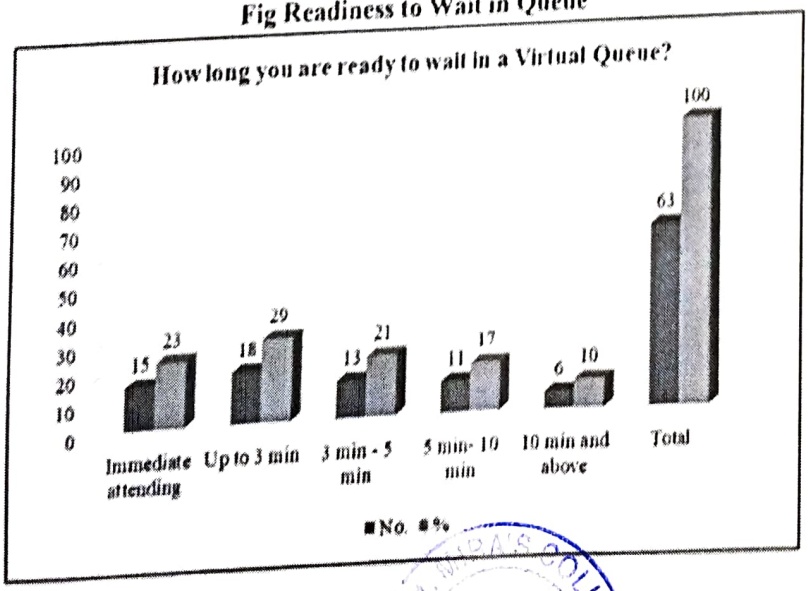
Majority of the customers ranked following benefits as Somewhat Important

Decrease service time- 39.6

Eliminate customer anxiety- 30.1%

Reduces the number of abandoned calls- 34.9 %

Fig Readiness to Wait in Queue

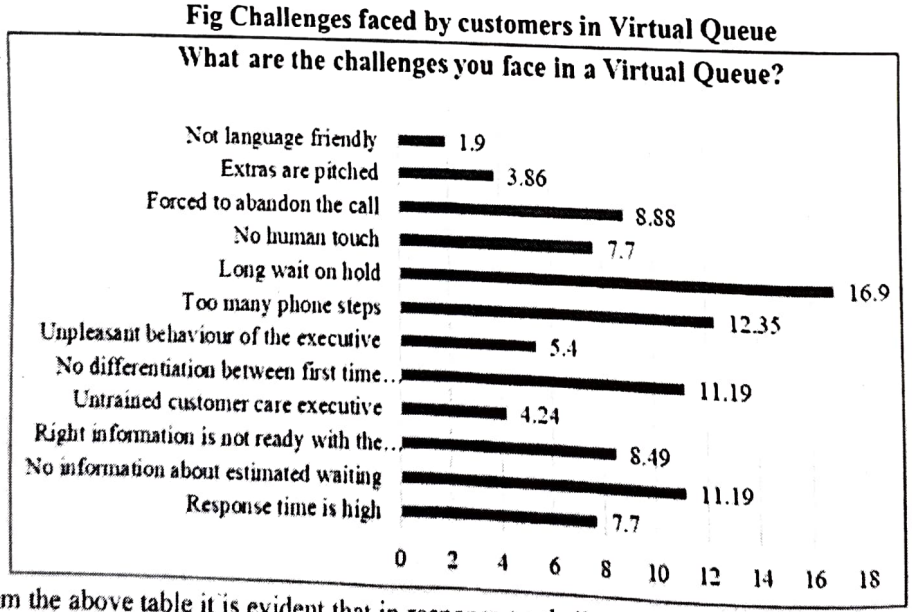


The above graph depicts majority of the respondents (28.6%) are ready to wait up to 3 minutes in virtual queue to avail the service. 22.2% respondents want immediate attending to them.

Table 7 Challenges faced by customers in Virtual Queue

What are the challenges you face in a Virtual Queue? (You can tick as many applicable)		
Category	**Number of Responses**	
		%
Response time is high	20	7.7
No information about estimated waiting	29	11.19
Right information is not ready with the executive	22	8.49
Untrained customer care executive	11	4.24
No differentiation between first time customers and repeat customers	29	11.19
Unpleasant behaviour of the executive	14	5.4
Too many phone steps	32	12.35
Long wait on hold	44	16.9
No human touch	20	7.7
Forced to abandon the call	23	8.88
Extras are pitched	10	3.86
Not language friendly	5	1.9
TOTAL	**259**	**100**

Fig Challenges faced by customers in Virtual Queue



From the above table it is evident that in response to challenges face in a Virtual Queue majority of the respondents (16.9%) opine Long wait on hold is the biggest challenge followed by (12.35%) feel Too many phone steps, 11.19% feel No information about estimated waiting are the other major challenges. On the contrary only 1.9%feel Not language friendly is the challenge.

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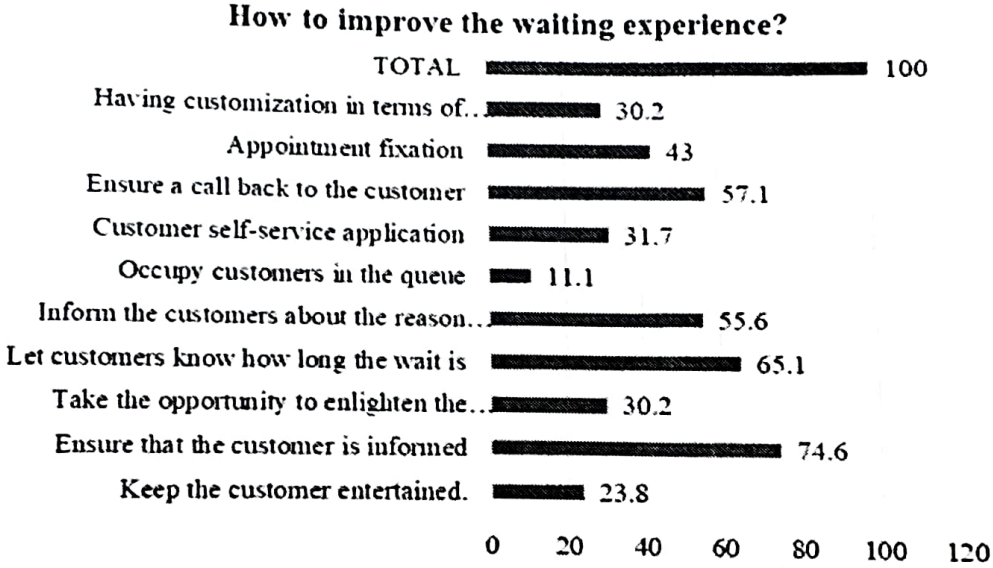
Table 8 Improving Customer Experience

How to improve the waiting experience? (You can tick as many applicable to you)		
Category	Number of Responses	%
Keep the customer entertained.	15	23.8
Ensure that the customer is informed	47	74.6
Take the opportunity to enlighten the customer.	19	30.2
Let customers know how long the wait is	41	65.1
Inform the customers about the reason to wait	35	55.6
Occupy customers in the queue	7	11.1
Customer self-service application	20	31.7
Ensure a call back to the customer	36	57.1
Appointment fixation	28	43
Having customization in terms of language	19	30.2
TOTAL	267	100

Fig. Improving Customer Experience



The above table shows that in response to ways to improve the waiting experience majority (74.6%) of the respondents feel firstly companies should ensure that the customer is informed followed by (65.1%) feel let customers know how long the wait is, (57.1%) feel ensure a call back to the customer, and contrary only (11.1%) feel keep customers occupied in the queue.

Table 9 Physical Customer Queue vs Virtual Customer Queue

Rank the following benefits of Virtual Queuing in order of importance. Comparison of Physical Customer Queue vs Virtual Queue (Please mark a √ against better of the two)						
Types of Response	Physical Customer Queue		Virtual Customer Queue		Total	
		%		%		%
Fairness	35	55.5	28	44.44	63	100

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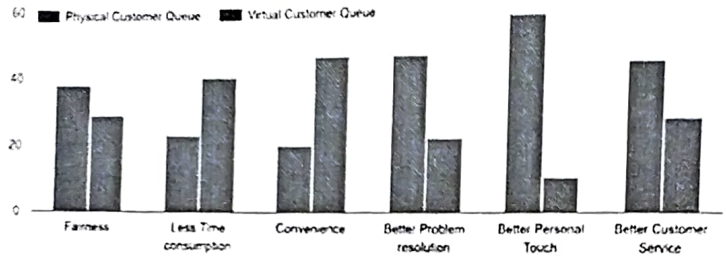
Less Time consumption	23	36.5	40	63.4	63	100
Convenience	19	30.15	44	69.84	63	100
Better Problem resolution	43	68.5	20	31.7	63	100
Better Personal Touch	55	87.3	8	12.6	63	100
Better Customer Service	40	63.4	23	36.5	63	100

Fig 9- Physical Customer Queue vs Virtual Customer Queue

8. Comparison of Physical Customer Queue vs Virtual Queue (Please mark a √ against better of the two)



From the above table it's evident that in response to comparing physical queues to virtual customers feel physical queues are preferable in cases of Fairness (55.5%), Better Problem resolution (68.5%), Better Personal Touch (87.3%), Better Customer Service (63.4%), whereas virtual queues are better in cases of Less Time consumption (63.4%) and Convenience (69.84%).

Table 10- Impact of long virtual queues

How does Long Virtual Queues impact you?												
Types of Response	Least Common		Somew		Neutral		Somew		Most		Total	
		%		%		%		%		%		%
Abandon the call	4	6.3	7	11.1	1	23.83	14	22	2	36.	6	10
Rated poor on	6	9.5	7	11.1	1	30.1	11	17	2	31.	6	10
Customers switched	4	6.3	6	9.5	1	28.5	18	29	1	26.	6	10
Did not recommend	3	4.7	4	6.34	1	30.1	16	25	2	33.	6	10
Lowers the sales of	4	6.3	7	11.1	2	39.6	11	17	1	25.	6	10
Leads to anxiety and	3	4.7	3	4.7	1	20.6	18	29	2	41.	6	10

Fig. 10 Impact of long virtual queues

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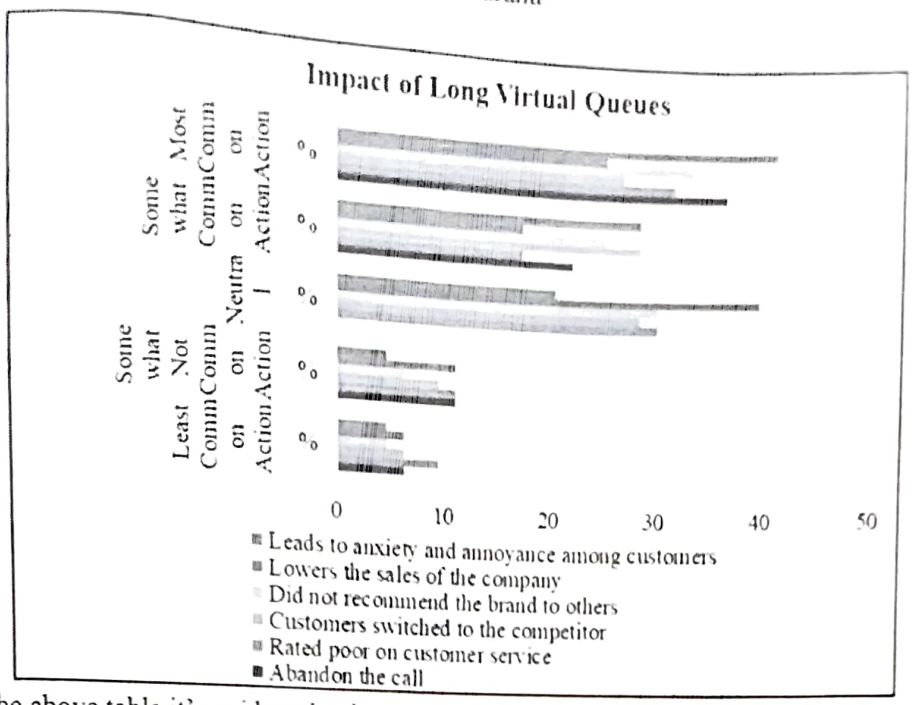

From the above table it's evident that in response to how long virtual queues impact respondents' majority of respondents (41.2%) said it Leads to anxiety and annoyance followed by 36.5% respondents Abandoning the call and 33.33 said they do not recommend the brand to others.

6. HYPOTHESIS TESTING:

Hypothesis 1: Personnel touch is the major significant reason for customers preference for physical queuing.

H0: Personnel touch do not influence customers preference for physical queuing.

H1: Personnel touch does influence customers preference for physical queuing.

Hypothesis 2: Customers prefer virtual queue for ease of convenience over physical queue

H01: Ease of convenience does not influence customer preference for virtual queue.

H11: Ease of convenience does not influence customer preference for virtual queue.

Hypothesis 3: Virtual queues face biggest challenge of not having right customer care staff.

H01: Not having right customer care staff is not a significant challenge for virtual queue.

H11: Not having right customer care staff is a significant challenge for virtual queue.

Testing of Hypotheses

Hypothesis 1: Personnel touch is the major significant reason for customers preference for physical queuing

To test the above hypothesis statistically, it has been reframed as follows;

H0: Personnel touch do not influence customers preference for physical queuing

H1: Personnel touch does influence customers preference for physical queuing

Chi square test

Observed Frequency

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O_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
Better Personal Touch	57	10	67
other reasoning factors	170	164	334
Total	227	174	401

Where, Oij is the observed frequency count for the ith row and jth column of the categorical variable

Expected Frequency

E_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
Better Personal Touch	37.93	29.07	67
other reasoning factors	189.07	144.93	334
Total	227	174	401

Where, E_{ij} = is the expected frequency count for the *i*th row and jth column of the categorical variable = Sum (i^{th} row) * Sum (jth column)/N and N is grand total.

Test Statistic χ^2 is as follows;

$$\text{Test statistic} = \chi^2 = \Sigma \left[(O_{ij} - E_{ij})^2 / E_i \right]$$

$(Oij-Eij)^2/Ej$	Physical Customer Queue	Virtual Customer Queue	Total
Better Personal Touch	9.59	12.51	22.10
other reasoning factors	1.92	2.51	4.43
Total	11.51	15.02	**26.54**

Chi sq. observed = 26.54

Chi sq. table value (0.05,1) = 3.841

Conclusion

As chi square observed is greater than chi sq. table value, we reject H0 i.e., the two variables namely type of queues and reasons for customer preference for physical queuing are associated. Also, from the frequency table it is observed that out of the 67 responses, 57 respondents (85.07%) stated that because of better personnel touch they prefer physical queue. Thus, it can be concluded that personnel touch does influence customer preference for physical queuing.

Hence it is concluded that personnel touch is the major significant reason for customers preference for physical queuing.

Hypothesis 2: Customers prefer virtual queue for ease of convenience over physical queue

To test the above hypothesis statistically, it has been reframed as follows;

H01: Ease of convenience does not influence customer preference for virtual queue

H11: Ease of convenience does influence customer preference for virtual queue

Chi square test

Observed Frequency

O_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
Ease of convenience	20	46	66
other reasoning factors	207	128	335
Total	227	174	401

Where, Oij is the observed frequency count for the ith row and jth column of the categorical variable

Expected Frequency

E_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
Ease of convenience	37.36	28.64	66
other reasoning factors	189.64	145.36	335
Total	227	174	401

Where, Eij = is the expected frequency count for the ith row and jth column of the categorical variable = Sum (ith row) * Sum (jth column)/N and N is grand total.

Test Statistic χ^2 is as follows;

$$\text{Test statistic} = \chi^2 = \Sigma \left[(O_{ij} - E_{ij})^2 / E_i \right]$$

$(Oij-Eij)^2/Ej$	Physical Customer Queue	Virtual Customer Queue	Total
Ease of convenience	8.07	10.53	18.59
other reasoning factors	1.59	2.07	3.66
Total	9.66	12.60	**22.26**

Chi sq. observed = 22.26

Chi sq. table value (0.05,1) = 3.841

Conclusion

As chi square observed is greater than chi sq. table value, we reject H0 i.e., the two variables namely type of queues and benefits from virtual queue versus physical queue are associated. Also, from the frequency table it is observed that 46 respondents (69.70%) out of total 66 have mentioned

ease of convenience as the benefit of virtual queue. Thus, it is concluded that ease of convenience is the major factor for customer preference for virtual queue.

Hence it is concluded that customers prefer virtual queue for ease of convenience over physical queue.

Hypothesis 3: Virtual queues face biggest challenge of not having right customer care staff

To test the above hypothesis statistically, it has been reframed as follows;

H01: Not having right customer care staff is not a significant challenge for virtual queue

H11: Not having right customer care staff is a significant challenge for virtual queue

Chi square test

Observed Frequency

O_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
No right customer care staff	34	112	146
other factors	25	98	123
Total	59	210	269

Where, Oij is the observed frequency count for the ith row and jth column of the categorical variable

Expected Frequency

E_{ij}	Physical Customer Queue	Virtual Customer Queue	Total
No right customer care staff	32.02	113.98	146
other factors	26.98	96.02	123
Total	59	210	269

Where, Eij = is the expected frequency count for the ith row and jth column of the categorical variable = Sum (ith row) * Sum (jth column)/N and N is grand total.

Test Statistic χ^2 is as follows;

$$\text{Test statistic} = \chi^2 = \Sigma \left[(O_{ij} - E_{ij})^2 / E_i \right]$$

$(Oij-Eij)^2/Ej$	Physical Customer Queue	Virtual Customer Queue	Total
No right customer care staff	0.12	0.03	0.16
other factors	0.14	0.04	0.19
Total	0.27	0.08	0.34

Chi sq. observed = 0.34

Chi sq. table value (0.05,1) = 3.841

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Conclusion

As chi square observed is smaller than chi sq. table value, we accept H0 i.e., the two variables namely type of queues and factors creating challenges for virtual queues are not associated. Even from the frequency table it is observed that not having right customer care staff and other factors creating challenges have shown influence on virtual queues with a very slight difference. Thus, it is concluded that not having right customer care staff is not the only significant challenge for virtual queue.

Hence it is concluded that not having a right customer care staff is not the only biggest challenge for virtual queues.

7. CONCLUSION AND SUGGESTIONS

7.1 Conclusion:

1. Virtual Queuing System is a system where are not required to wait in a physically but virtually to avail services
2. Though practically all customers are aware of virtual queuing offered for customer care services but they may prefer physical queues for the sake of personal touch, fairness and perceived better services
3. The most important factors supporting Virtual queuing and servicing by firms are: To manage customer traffic (50.7%), Ease of handling long queues (47.6%), Ease of handling customer query and enhance productivity (44.44%) and Customer Friendly Technology (44.44%)
4. The study brings out most important benefits of virtual queueing as Reduce wait time- 44.44%, Monitor and improve staff performance- 47.6%, Increase customer satisfaction- 39.6%, Offer a more personalized service experience- 38%, Convenience to the customer- 38%

   The biggest issues faced by customers during the process of customer care services are - (16.9%) opine Long wait on hold, (12.35%) feel Too many phone steps, 1(1.19%) feel No information about estimated waiting are the other major challenges
5. Comparison between virtual queuing and physical queueing- It is observed that though virtual queueing and servicing is gradually increasing but physical queues are preferable for customer perceived benefits of Fairness (55.5%), Better Problem resolution (68.5%), Better Personal Touch (87.3%), Better Customer Service (63.4%). The biggest preference in case of virtual queues are Less Time consumption (63.4%) and Convenience (69.84%).

7.2 Suggestions: Based on the findings of the study following suggestions are put forth:

- Improve overall Customer Experience- Reduce wait time, give proper and accurate information, identify the areas of concern for customers and loopholes existing in your systems and work towards developing seamless solution platforms. Make it more user-friendly and time saving for customers.

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- Quick responses and special treatment for repeat customers. Preference can be given to loyal customers who had been using the service since ages. If any queries taking time, then call back option is mandatory...
- Efficient response from customer support- the firms need to ensure right strength of customer care executive and have well trained employee who have good communication along with problem handling and solving capability. Executive has to have more knowledge on what kind of issues will be faced. Prioritize for the emergency issues and no queue for them. Getting feedback from regular customers Courtesy and apology once reconnected. Monitor staff efficiency through virtual queue system data
- Reduce the number of phone steps- More eased steps to reach the correct point where one's problem can be solved. Less waiting time. Most queuing systems have a very long wait time. Reducing the wait time will significantly improve the system. Good network at the customer service end so the quality of call is good.
- Informing the customer and setting expectations- Keeping the customers informed about the queuing process and personalizing the experience. The customer is frequently informed about the wait time left. Designate a call at fixed time and possibly appointment-based call back should be provided.
- The companies should invest in state-of-the-art technology like automated response machines, Bots with time response, data mining systems etc. Also, they should after cost benefit analysis increase more interface / channel to attend customer.
- Firms should ensure there's proper information available on website or apps available to guide customers and prospects through systems.
- Personalisation-While interacting over Virtual queuing, there is no personal touch between customer care executive and customer. Executives gives their proper attention while customer is in front of them at counter. Banking institutions need to work more on virtual queuing platforms.
- Push the organization towards branchless operations

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