

Perception of Housing finance Customers

(A comparative study between Public & Private Banks, at Visakhapatnam District, A, P)

Dr. KVB Ganesh, Assistant Professor, Department of MBA, Koneru Lakshmaiah Education Foundation, Vaddeswaram Campus, Guntur District-522502, Andhra Pradesh, India, Email: kvbganesh@gmail.com Mobile:9885503277

V.S. Prasad Kandi, Assistant Professor, Department of MBA, Koneru Lakshmaiah Education Foundation, Vaddeswaram Campus, Guntur District-522502, Andhra Pradesh, India, Email: kandi.vsp@gmail.com, Mobile: 9885997969

DOI : 10.48047/IJFANS/V11/ISS12/1043

Abstract:

Construction of a house is a life time dream for every individual. Before taking decision about to housing loan everyone will go through different perceptions. The present study reveals their comparisons of about availing funds as a source of their housing finance. They will see all banks operations which are providing housing finance and also observe all types of state and central government schemes, and there after they will compare one with other schemes and also banks. The present study focusing on comparison between public and private banks in Visakhapatnam district of A.P how they providing loans to their customers along with making them beneficial.

Key terms: Housing Finance, Beneficial, Perception.

Dr. KVB Ganesh, Assistant Professor, Department of MBA, Koneru Lakshmaiah Education Foundation, Vaddeswaram Campus, Guntur District-522502, Andhra Pradesh, India, Email: kvbganesh@gmail.com Mobile:9885503277

V.S. Prasad Kandi, Assistant Professor, Department of MBA, Koneru Lakshmaiah Education Foundation, Vaddeswaram Campus, Guntur District-522502, Andhra Pradesh, India, Email: kandi.vsp@gmail.com, Mobile: 9885997969

Introduction

The word perception is a psychological term which works at conscious state only. Every person is looking for satisfying their needs. After food, the immediate need is cloths and shelter. So majority people are seeking to satisfy with these needs irrespective of their social classes.

The present research paper is focusing the perception of people while satisfying their need i.e. at availing housing loans from banks. What are the schemes of various public and private banks? How they benefitted if they would like to go for home loans.

RESEARCH GAP

From the literature review, it is observed that many of the studies in the banking sector in India and abroad are related to various aspects like branch expansion, deposit mobilization, priority sector lending, customer service, technology and profitability. However, there are very few studies relating to the housing finance, personal loans, attitudes of customers and problems faced by the banks in providing housing loans, national and international wide. When compared to personal loans home loan studies are very few.

STATEMENT OF THE PROBLEM:

From the research gap, the statement of the present problem has drawn, is various problems facing by the customers to getting housing finance and several problems facing by the banks to providing home loans. The title is “An Appraisal of Housing Finance Schemes of Commercial Banks (A comparative study between public and private sector banks in Visakhapatnam district, AP)”.

OBJECTIVES OF THE STUDY:

1. To compare and understand the perception of Housing loan customers on their banks.
2. To elicit the views of customers on various housing finance schemes those are provided by both public and private banks in Visakha area
3. To draft a necessary implications from customers perception on home loans

HYPOTHESIS

H₀- There are no significant differences in the views of customers towards various aspects like loan amount applied, loan amount sanctioned, submitting documents etc., for housing finance of selected banks.

SCOPE OF THE STUDY:

Basically, the present study is to evaluate the “An Appraisal of Housing Finance Schemes of Commercial Banks (A comparative study between public and private sector banks in Visakhapatnam district, AP)”. Thus the study intends to focus on two categories of commercial banks in the Visakhapatnam district (A.P) such as Public Sector Banks (State Bank of India, Union Bank, Panjab National Bank), Private Sector Banks (ICICI, HDFC, and AXIS).

This study covers customers and employees in relation with housing finance schemes. It is to show that the study finally can offer suitable and relevant suggestions and strategies to the

banks, which are worthy of consideration to the public and private banks to provide housing finance to the customers and reducing the problems of banks at the time of providing loans. The researcher only considers customer views for the present paper.

METHODOLOGY OF THE STUDY:

Selection of the banks

The Investigator wrote a letter to the authorities of all banks (Public and Private sector banks) for seeking permission to collect the relevant information from the banks with lot of correspondence and efforts, the authorities of the following banks have accepted to permit the investigator to collect information. The sample banks are selected on the following criteria.

1. No of branches in Visakhapatnam district.
2. Popularity and market capitalization of select banks in study area.
3. Ranks given by the concerned authorities like RBI.,

Sampling Technique

The researcher selected convenience sampling method for the customers because the customers are large in number and scattered, and stratified random sampling for employees because the investigator visited few branches of the selected public and private sector banks in the district. The sample of employees consists of Managers, Assistant manager and Field officers. The sample is drawn on the basis of experience of the employees in the selected branches five years is considered as appropriate for the selection of the sample. The following is the category sample of customers, employees and selected banks of the study.

Category of profile of respondents (Customers sample-385)

Category		Public Sector Banks			Private Sector Banks		
		SBI	UNION	PNB	ICICI	HDFC	AXIS
Gender	Male	62	41	36	59	33	31
	Female	30	20	17	23	19	14
Total		92	61	53	82	52	45
Age	30-40	38	21	19	29	19	15
	40-50	49	33	26	46	28	27
	50-60	5	7	8	7	5	3
Total		92	61	53	82	52	45
	Below SSC	13	6	4	12	9	6
	Inter	24	16	20	29	17	16

Education	Graduation	33	25	14	20	14	10
	Post-Graduation	15	7	9	16	8	8
	Others	7	7	6	5	4	5
Total		92	61	53	82	52	45
Occupation	Formers	19	8	7	15	9	4
	BusinessMan	27	19	13	24	13	16
	Employees	41	29	29	38	25	21
	Others	5	5	4	5	5	4
Total		92	61	53	82	52	45

The category of profile of respondents (customers) is shown in table, from the total sample size of public and private sector banks are 521, from that 385 respondents are customers and 136 respondents are employees. The above table category of respondents (customers) is presented with the help of gender, age, education and occupation. Male respondents dominated over female respondents in all the sample banks of both public and private sector which are included in the study. In the age group, respondents of 40-50 years age are more in number when comparative other age groups. In case of education, the respondents who completed graduation are more in two public sector banks that is SBI and Union Bank and in case of Punjab national bank. The respondents who completed intermediate are more. In case of three private sector banks, the respondents who have intermediate as their qualification are more. In case of occupation, employer dominated all the public and private sector banks which are included in the study.

Sources of Data: The study required both primary and secondary data.

Primary Data

Primary data are collected through the responses of the customers and employees through structured questionnaires which were prepared for this study. The questionnaire contained questions regarding the problems faced by the customers at the time of getting the loans from the banks and problems facing by the banks at the time of giving the loans, the researcher conducted **pilot study** with a sample of 52 customers and 35 employees in both public and private sector banks in Visakhapatnam district. The result of the pilot study is majority of the customers are facing problems in getting housing loans and the employees are also facing some problems at time of provide housing finance. On the basis of their

responses, some questions are modified and the modified questionnaire is finally canvassed among the 385 customers and 136 employees are selected.

Secondary Data

There was extensive use of secondary information in the form of books, articles published in magazines, journals, newspaper, reports of Banks, websites, circulars, pamphlets of the banks, clippings etc.

Analysis of data

The collected data were scrutinized and analyzed. The analyzed data was analyzed with the using of software “Statistical Package for Social Sciences” (SPSS) and meaningful conclusion were arrived by constructing simple and two-way tables, graphs and charts. The table were constructed for analyzing the information of the sample. Two-Way table were constructed for the comparative analysis and to know the problems facing by the customers and employees between three public and three private sector banks. At last the differences between different variables were tested by using the Average, Variance, T- test, Anova, and Co-relation. These tools may be explained briefly.,

1. Average: The average or mean is the most popular and well known measure of central tendency. In this analysis the researcher used this tool to know the central position of response given by the public and private sector banks customers.

2. Variance: The variance measures how far each number in the set is from the mean. It is utilized as a part of the study to know how far the gathered information esteems are speeded from its normal.

3. T- test: A t-test is an analysis of two population's means through the use of statistical examination; a t-test with two samples is commonly used with small sample sizes, testing the distinction between the specimens when the fluctuations of two ordinary disseminations are not known. Here it is used in the analysis to determine the probability of difference between the populations of public and private sector banks.

4. Anova: The primary purpose of a two-way ANOVA is to understand if there is an interaction between the two independent variables (called factors) on the dependent variable (called factors). Here the investigator used this technique to perceive the relation between public and private sector banks (two independent variables) with the given problems

SIGNIFICANCE OF THE STUDY

The study is of current relevance as it seeks to analyze appraisal of housing finance schemes of commercial banks in the Visakhapatnam district, Andhra Pradesh. The study aims problems facing by the customers and banks at the time of getting home loans which would

be a great help to all concern such as scholars, policy makers, bankers, customers and public etc., as the banking industry as a whole is in transition and undergoing several changes due to liberalization, privatization and globalization.

LIMITATIONS OF THE STUDY:

1. This research study was taken in a limited area only (i.e Visakhapatnam district only) and findings may vary from place to place.
2. The study was limited to three public sector banks and three private sector banks.
3. Some of the respondents might have given biased in their responses as it depends on their experience gained by them during processing of such loans. However necessary steps have been taken to reduce the bias in the response by using statistical techniques.
4. Some of the conclusions also depend upon secondary data which are reliable to the extent.

S. NO	Stage of Construction	Total		PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
		Total		SBI		UBI		PNB		ICICI		HDFC		AXIS	
		N=385	%	N=92	%	N=61	%	N=53	%	N=82	%	N=52	%	N=45	%
A	Below 20%	98	25.5	28	30.4	13	21.3	13	24.5	21	25.6	12	23.1	11	24.4
B	30%	194	50.4	38	41.3	30	49.2	30	56.6	44	53.7	30	57.7	22	48.9
C	40%	62	16.1	20	21.7	11	18.0	7	13.2	9	11.0	6	11.5	9	20.0
D	Above 50%	31	8.1	6	6.5	7	11.5	3	5.7	8	9.8	4	7.7	3	6.7
	Total	385	100	92	100	61	100	53	100	82	100	52	100	45	100

5. Since the interest rates of Housing Finance are fluctuating regularly because of changes in RBI policies. The changing interest rate aspect was not considered.

Table1: Stage of house construction

Source: Primary Data

Interpretation: The above table IV.VII represents the information relating to the stage of house construction between public and private sector banks. According to this table 50.4% of respondents completed 30% of construction, It is followed by 25.5% of customers completed 20% of construction and only 8.1% of customers completed 50% of their house construction. From the total customers in the case of public sector banks on average 50.51% of customers completed 30% of their house construction whereas in the case of private sector bank costumers expressed the same comment. It is observed in the both banking sectors a few customers approached the banks who completed partially in between 40% and 50%. In the construction point of view among

the public sector banks in PNB 56.6% of customers approached banks for loan after completion of their house at least 30%, whereas in the private sector banks particularly 57.7% of HDFC customers approached the banks for the loan at the same level.

Statistical Data:

t-Test: Two-Sample Assuming Equal Variances

	<i>PUBLIC SECTOR</i>	<i>PRIVATE SECTOR</i>
	<i>BANKS</i>	<i>BANKS</i>
Mean	51.5	44.75
Variance	1203.667	1314.25
Observations	4	4
Pooled Variance	1258.958	
Hypothesized Mean Difference	0	
Df	6	
t Stat	0.269038	
P(T<=t) one-tail	0.398456	
t Critical one-tail	1.94318	
P(T<=t) two-tail	0.796913	
t Critical two-tail	2.446912	

There is no significant difference between public and private sector banks.

Anova: Two-Factor Without Replication

<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Below 20%	6	98	16.33333	45.46667
30%	6	194	32.33333	58.26667
40%	6	62	10.33333	25.46667
Above 50%	6	31	5.166667	4.566667
SBI	4	92	23	182.6667
Union Bank	4	61	15.25	102.9167
PNB	4	53	13.25	141.5833
ICICI	4	82	20.5	280.3333
HDFC	4	52	13	140
AXIS	4	45	11.25	62.91667
PUBLIC SECTOR BANKS	4	206	51.5	1203.667
PRIVATE SECTOR BANKS	4	179	44.75	1314.25

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	2498.125	3	832.7083	53.57909	3.01E-08	3.287382
Columns	435.7083	5	87.14167	5.606971	0.00414	2.901295
Error	233.125	15	15.54167			
Total	3166.958	23				

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	7494.375	3	2498.125	126.2211	0.00118	9.276628
Columns	91.125	1	91.125	4.604211	0.121194	10.12796
Error	59.375	3	19.79167			
Total	7644.875	7				

Inference:

There is a significant difference among the quantity of customers of various banks in terms of the stage of construction. There is a significant difference among the quantity of customers of public vs. private sector banks in terms of the stage of construction. Highest average is observed with the category “30% of construction”. H_0

S. NO	% of Own Money	Total		PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
				SBI		UB		PNB		ICICI		HDFC		AXIS	
		N=	%	N=	%	N=	%	N=	%	N=	%	N=	%	N=	%
		38		92		61		53		82		52		45	
A	10-20	20	54.3	45	48.9	35	57.4	29	54.7	45	54.9	30	57.7	25	55.6
B	20-30	12	33.0	29	31.5	19	31.1	16	30.2	29	35.4	19	36.5	15	33.3
C	30-40	39	10.1	17	18.5	5	8.2	6	11.3	6	7.3	2	3.8	3	6.7
D	Above 40	10	2.6	1	1.1	2	3.3	2	3.8	2	2.4	1	1.9	2	4.4
	Total	38	10	92	100	61	100	53	100	82	10	52	100	45	100

is rejected w.r.t customers of public vs. private sector banks.

There is a significant difference among the quantity of customers of different category in terms of the name of the bank they associated with. Highest average is observed with SBI.

There is no significant difference among the quantity of customers of different category in terms of the type (public vs. private) of the bank they associated with. The stage of the home going to be constructing is 30% of construction in most of the cases.

Table 2: Percentage (%) of Own money for building construction

Source: Primary Data

Interpretation: The above table IV.VIII depicted the information relating to the own money contribution by the customers for building construction. According to this 54.3% of home loan customers spent only 10% to 20% of their own funds for the building construction. This is followed by the 33.0% borrowers spent 20% -30% of their own money and only 2.6% of customers spent above 40%. It is observed that in the case of public sector banks (SBI, UB, PNB) on average 52.15% of customers spent their own money for the house and only 50% of customers spent very huge amount in the building construction. It is also observed in the case of private sector banks (ICICI, HDFC, and AXIS) on average 47.84% of respondents spent same percentage of money. In the case of Andhra bank 57.4% of customers spent between 10%-20% of their own money whereas in the case of private sector banks particularly in HDFC 57.7% of customers spent the same percentage of money for the building construction. So it is found that public sector banks customers are spending less own money than the private sector banks.

Statistical Data:

t-Test: Two-Sample Assuming Equal Variances

	<i>PUBLIC SECTOR BANKS</i>	<i>PRIVATE SECTOR BANKS</i>
Mean	51.5	44.75
Variance	2059	2034.917
Observations	4	4
Pooled Variance	2046.958	
Hypothesized Mean Difference	0	
df	6	
t Stat	0.210991	
P(T<=t) one-tail	0.419939	
t Critical one-tail	1.94318	
P(T<=t) two-tail	0.839878	
t Critical two-tail	2.446912	

There is no significant difference between public and private sector banks.

Anova: Two-Factor without Replication

<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10%-20%	6	209	34.83333	72.16667
23%-30%	6	127	21.16667	39.36667
30%-40%	6	39	6.5	29.1
Above 40%	6	10	1.666667	0.266667
SBI	4	92	23	346.6667
Union Bank	4	61	15.25	228.25
PNB	4	53	13.25	144.9167
ICICI	4	82	20.5	408.3333
HDFC	4	52	13	196.6667
AXIS	4	45	11.25	118.9167
PUBLIC SECTOR BANKS	4	206	51.5	2059
PRIVATE SECTOR BANKS	4	179	44.75	2034.917

Conclusion

In this study the researcher have compared the performance of three leading public sector banks (SBI, UB, PNB) and three private sector banks (ICICI, HDFC, AXIS). In many of the aspects, problems and differences have been noticed especially in customers level of satisfaction.

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	4062.458	3	1354.153	75.5689	2.78E-09	3.287382
Columns	435.7083	5	87.14167	4.862967	0.00765	2.901295
Error	268.7917	15	17.91944			
Total	4766.958	23				

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	12187.38	3	4062.458	129.1377	0.001141	9.276628
Columns	91.125	1	91.125	2.896689	0.187316	10.12796

Error	94.375	3	31.45833
Total	12372.88	7	

Inference:

There is a significant difference among the quantity of customers of various banks in terms of "% of Own money for building construction" There is a significant difference among the quantity of customers of public vs. private sector banks in terms of % of Own money for building construction"

Highest average is observed with the category "10%-20%".

H_0 is rejected w.r.t customers of public vs. private sector banks.

There is a significant difference among the quantity of customers of different category in terms of the name of the bank they associated with.

Highest average is observed with SBI.

There is no significant difference among the quantity of customers of different category in terms of the type (public vs. private) of the bank they associated with.

Most of the customers have 10 -20 per cent of own source of investment.

Table 3: Amount required for construction

S. NO	Requ red A mo unt	Total		PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
				S B I		U B		P N B		ICICI		HDFC		AXIS	
		N=3 85	%	N=9 2	%	N=6 1	%	N=5 3	%	N=8 2	%	N=52	%	N=45	%
A	Below 10 Lakhs	64	16.6	15	16.3	7	11.5	6	11.3	21	25.6	9	17.3	6	13.3
B	10-15 Lakhs	192	49.9	55	59.8	29	47.5	25	47.2	38	46.3	25	48.1	20	44.4
C	15-20 Lakhs	114	29.6	19	20.7	24	39.3	18	34.0	20	24.4	15	28.8	18	40.0
D	Above 20 Lakhs	15	3.9	3	3.3	1	1.6	4	7.5	3	3.7	3	5.8	1	2.2
	Total	385	100	92	100	61	100	53	100	82	100	52	100	45	100

Source: Primary Data

Interpretation: The above table represented the information relating to the amount required for completion of building in the table IV.IX. According to the above table it is observed that 49.9% of respondents required below 10-15 lakhs for building completion and nearly 29.6% of respondents are required 15 - 20 lakhs and only 16.6% of respondents

are required below 10 lakhs and only 3.95% of customers required above 20 lakhs money. A similar observation found in the both banking sector that is majority of the respondents required the 10 to 15 lakhs for house completion and 15-20 lakhs. It is noticed that in the case of public sector banks 59.8% of customers are required 10-15 lakhs and in the private sector banks particularly in ICICI bank 46.35% of customers required the same amount. It is also observed that in the case of public sector banks here the customers are required amount is more than the private sector banks.

Statistical Data:

t- Test: Two-Sample Assuming Equal Variances

	<i>PUBLIC SECTOR BANKS</i>	<i>PRIVATE SECTOR BANKS</i>		
Mean	51.5	44.75		
Variance	1947	1010.917		
Observations	4	4		
Pooled Variance	1478.958			
Hypothesized Mean Difference	0			
df	6			
t Stat	0.248322			
P(T<=t) one-tail	0.40612			
t Critical one-tail	1.94318			
P(T<=t) two-tail	0.81224			
t Critical two-tail	2.446912			
	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Below 10 Lakhs	6	64	10.66667	37.06667
10-15 Lakhs	6	192	32	163.2
15-20 Lakhs	6	114	19	8.8
Above 20 Lakhs	6	15	2.5	1.5
SBI	4	92	23	501.3333
Union Bank	4	61	15.25	178.9167
PNB	4	53	13.25	99.58333
ICICI	4	82	20.5	204.3333
HDFC	4	52	13	88
AXIS	4	45	11.25	84.91667
PUBLIC SECTOR BANKS	4	206	51.5	1947
PRIVATE SECTOR BANKS	4	179	44.75	1010.917

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	2854.125	3	951.375	23.12437	7.04E-06	3.287382
Columns	435.7083	5	87.14167	2.118088	0.119465	2.901295
Error	617.125	15	41.14167			
Total	3906.958	23				

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	8562.375	3	2854.125	27.49859	0.01104	9.276628
Columns	91.125	1	91.125	0.877961	0.417883	10.12796
Error	311.375	3	103.7917			
Total	8964.875	7				

Inference: There is a significant difference among the quantity of customers of various banks in terms of the Amount required for completion. There is a significant difference among the quantity of customers of public vs. private sector banks in terms of the level of expenditure for construction of buildings. Highest average is observed with the category “10-15 Lakhs”. H_0 is rejected w.r.t customers of public vs. private sector banks.

There is no significant difference among the quantity of customers of different category in terms of the name of the bank they associated with. There is no significant difference among the quantity of customers of different category in terms of the type (public vs. private) of the bank they associated with.

In most of the cases the amount required for completion of the house as a loan is 10-15 Lakhs

Conclusion: No one customer is exempted from perception of anything. The present paper also proved that how the customers approached according to their interests. So that the Banks also consider customer perception into consideration while fixed the loan schemes to the execution of profits.

References:

1. Boyd, William, L., Leonard, Lyros and White, Charles., "Customer preferences for financial services', The International Journal of Bank Marketing, 1994, Vol.12:1, PP. 9-15
2. Bresinger, R.P and Lamtat, D.M "Can the SERVQUAL scale be Generalized to business-to-business service?", Knowledge Development in Marketing, AMA's Summer Educations Conference Proceedings, American Marketing Association, Chicago, IC, 1990, PP. 289
3. CMA Jayashree Ramanan, Dr. K. P. V. Ramana Kumar Chavan Jayshree, "Trends in Retail" International Journal of Business and Management Invention ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X, www.ijbmi.org, 2013, Volume 2 Issue 1 January, PP.55-62
4. Kajal Chaudhary and Monika Sharma, June "Performance of Indian Public-Sector Banks and Private Sector Banks: A Comparative Study", International Journal of Innovation, Management and Technology, June, 2011, Vol. 2 and PP. No. 3,
5. Thakur Satyendra, Singh A. P, "Impact of Service Quality on Customer Perception and Loyalty. In the Context of Retail Outlets in DB City Shopping Mall Bhopal", International Journal of Management Research and Review, 2011, Feb, Volume – 1, Issue- 1, Article No -3, Research Article.
6. VimiJham and Kaleem M Khan, "Customer Perception with Usage of Banks Distribution Channels: An Empirical Investigation: International Journal of Financial Services Management, 2008, Vol. 3 and pp 283-284.
7. Keerthe P and Vijayalakshmi R. "A Comparative Study On The Perception Level Of The Service Offered By Banks", Indian Journal Of Marketing, 2009, Vol.39, No.8, P.40-41
8. Revilla-Leon, M.; Ozcan, M. Additive Manufacturing Technologies Used for Processing Polymers: Current Status and Potential Application in Prosthetic Dentistry. J. Prosthodont. 2019, 28, 146–158.
9. Gonzalez-Gutierrez, J.; Cano, S.; Schuschnigg, S.; Kukla, C.; Sapkota, J.; Holzer, C. Additive Manufacturing of Metallic and Ceramic Components by the Material Extrusion of Highly-Filled Polymers: A Review and Future Perspectives. Materials 2018, 11, 840.
10. He, L.; Cheng, G.S.; Du, Y.J.; Zhang, Y.S. Feasibility of Device Closure for Multiple Atrial Septal Defects with an Inferior Sinus Venosus Defect: Procedural Planning Using Three-Dimensional Printed Models. Heart Lung Circ. 2020, 29, 914–920.
11. Thakkar, A.N.; Chinnadurai, P.; Breinholt, J.P.; Lin, C.H. Transcatheter closure of a sinus venosus atrial septal defect using 3D printing and image fusion guidance. Catheter. Cardiovasc. Interv. 2018, 92, 353–357.