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EXPLORING THE DETERMINANTS OF REVERSE MORTGAGE PURCHASE DECISION: EVIDENCE FROM INDIA

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Abstract

This paper aims to explore the factors that affect the reverse mortgage purchase decision with reference to the Indian context. Reverse mortgage can be presented as an effective solution to the problems of fast ageing population and increasing home ownership rate. The empirical investigations have been carried out using non-probability, purposive

sampling of persons above the age of 30, owing a house in India. Primary data was collected using a 5 point Likert scale from 360 respondents. PLS- SEM has been chosen as the research tool. Findings suggest that perception about reverse mortgage has a significant positive impact while bequest motive, risk and financial savings significantly negatively impact the purchase decision for reverse mortgage loans. The empirical results of the study can provide insight to the policy makers and the banking fraternity to focus on the specific areas to enable reverse mortgage to be more widely acceptable.

Originality/Value: In the absence of sufficient existing literature on Reverse Mortgage, the present study is an attempt to establish and reiterate its importance in the Indian context.

Keywords: Reverse Mortgage, Purchase Decision, Retirement, Ageing, Social Care, Perception, Retirees, Old Age

INTRODUCTION

Ageing as a phenomenon is inevitable across the globe. The main characteristics of today's global demographic movements are the problems of population ageing and social uncertainty of seniors due to regular income shortage. Persons above the age of 60, owing to their low and unsettled incomes, are the target of financial exclusion from banks and institutions, as they are unable to fulfill their rigid lending conditions. As per the data from the United Nations World's Population Prospects: the 2015 revision, worldwide there were 901 million persons aged 60 years or more in 2015, by 2030, this figure is projected to 1.4 billion (56% increase) and by 2050 it is expected to be close to 2.1 billion people (50% increase). Two third of this ageing population lives in developing countries and their

numbers are growing much faster than in the developed nations. The stark reality of ageing was recognized by the developed economies especially USA and countries of Western Europe way back in the mid-1980s. Housing wealth was recognized as a potential source to finance the retirement expenditure of the aged population [1]. Reverse Mortgage is one such financial innovation that enables a house to become a source of income, with the special feature that the owner has the right to live in his house until he (and his spouse) die. In the absence of social security cover and inadequate pensions, coupled with high home ownership rate, reverse mortgage can prove to be knight in shining armor, providing the much needed financing solution to the retired. Reverse Mortgage has been established as a formal system in many developed economies. Practices in the United States, Great Britain, and Australia have presented a promising future for the product and studies in the many western countries have agreed to the potential and impact of reverse mortgage as a means of utilizing home equity and improving retirement lives. Despite its perceived popularity, the product has not been very popular in many developing economies. Existing studies in India are limited to ascertaining the reasons for the unpopularity of the product. Most of the studies have either focused on the benefits of Reverse Mortgage or have studied the existing foreign practices in this area. To enable systematic study of reverse mortgage, the reasons for its unacceptance need to be necessarily categorized. This study therefore attempts to empirically explore the variables that influence a retiree's mindset to buy a Reverse Mortgage loan. The results of the study are expected to provide insight to the policy makers and the banking

fraternity to focus on the specific areas to enable reverse mortgage to be more widely acceptable.

LITERATURE REVIEW

This section deals with detailed reviews of theoretical and empirical studies on the determinants of reverse mortgage conducted worldwide. Firstly it discusses the numerous studies on reverse mortgage conducted worldwide and followed by a detailed review of the exiting study on the reverse mortgage purchase determinants. The origin of Reverse Mortgage as a method of financing dates back to 1930's when it was first introduced in Great Britain. In Unites States, Reverse Mortgage is in existence since the 1960s. By the 1970s it had spread to parts of Europe and in the 1980s it was seen in Australia, New Zealand and Canada as well (Ward, 2004; Law Reform Commission of Saskatchewan, 2006 in Matic, 2010). In 1987, Reverse Mortgages were officially introduced in the U.S. by the Department of Housing and Urban Development by the name of Home Equity Conversion or Reverse Annuity Mortgages. Over a period of time, the global problem of ageing is further compounded by the fact that most of these retirees are 'Home rich- Cash poor'. Thus, housing was recognized as a reliable source to finance retirement lives [1] through home equity conversion. Home equity conversion is the process of converting home equity into cash while the homeowner is still alive. In the past few years, the demand for home equity conversion products has gained ground and real estate financing has been witnessing the evolution of new, ingenious products. To meet the needs of the retired homeowner, reverse Mortgage therefore emerged as an effective mechanism that enables the conversion of illiquid, immovable real estate into cash. Reverse Mortgage facilitates a connection between the homeowner and the lender, giving

the former liquidity and the latter the right to dispose of that asset in the future in order to make a profit. Reverse Mortgage facilitate the extraction of cash from “walled equity” . Reverse Mortgage, thus enables an individual to convert this housing wealth into consumption, thereby maximizing the utility distribution throughout the life span. The primary aim of Reverse Mortgage loans is to benefit the third age. The theoretical background of Reverse Mortgage is deeply rooted in the theory of life cycle hypothesis that was proposed by Modigliani & Miller, 1954. The emergence of Reverse Mortgage from life cycle hypothesis finds credibility in the fact that income earned during the working years should ideally be distributed throughout all the stages of life, including retirement. Life cycle hypothesis explains the elderly’s desire to finance consumption by liquidating the assets acquired in their younger days [2]. And the fact that housing property is one of the main investments of an individual’s earnings, it constitutes a significant proportion of the individual’s total assets. Reverse Mortgage, thus enables an individual to convert this housing wealth into consumption, thereby maximizing the utility distribution throughout the life span. Over a period of time, innumerable studies on the various benefits of reverse mortgage have been carried across the world. A study [3] analyzed the data of AHS (American Housing Survey) and concluded that one fourth of the elderly above 65 years, whose income was below the poverty line, could use reverse mortgages program to make their lives better. A study [1] used the SIPP (Survey of Income and Program Participation) data and stated that one third of elderly home owners in USA could increase their income by more than 20 percent by opting for reverse mortgage. A study [2] presented their findings that around 800,000 out of 12 million households could benefit from reverse mortgages at a point in time. A study [1] stated that he lump sum payment from Reverse Mortgage can be used a last resort for financial emergencies such

as paying for medical bills or house repairs and refinancing/repayment of outstanding debts. Burns & Widdows, 1990 in Hogarth (1991) claim that reverse mortgage can enable an elderly to enhance his/her economic status and also reduce their reliance on public benefits. An Israeli research by Golovinski (2006) finds reverse mortgages to be quite popular among elderly people aged above 67 years old in Israel. Clarence (2009) argued upon the need for Reverse Mortgage by stating that financial planning techniques such as reverse mortgage can provide the opportunity to retired Americans to generate additional sources of retirement income. Matic (2009) states that reverse mortgage can help seniors supplement their current income, without selling their homes. A pioneer study [4] on reverse mortgage in India concluded that if reverse mortgage is designed and offered by an empathetic lender, it might be a savior for the elderly. If the product is marketed effectively, it might encourage more people in the working population to increase their real estate investments. A paper [5] analyzed the opportunities, threats, issues and challenges pertaining to reverse mortgage in India. They concluded that reverse mortgage has an excellent potential in India and their demand is expected to grow in the coming years. A study [6] found reverse mortgage loans to be particularly popular among lower-income and lower-wealth households. Makoto (2012) mentions the benefit of the inbuilt insurance cover in reverse mortgage product to insure the house against possible price declines. Alonso et al (2013) advocates the need for reverse mortgages as alternative income during old age. In his study the pension replacement rates are found to increase by nearly 30 points by incorporating life annuities derived from property assets. These results support the fact that the government efforts should be focused on exploring alternate financial mechanisms to generate supplemental income during old age. Jun Feng (2009) has analyzed the Chinese market and concludes that Reverse Mortgages would benefit the

elderly. The simulation results show that reverse mortgages can enable a Chinese elderly to double his/her consumption. Wang (2011) in his paper has stressed upon the need and importance of reverse mortgage in China. Owing to the one child policy there, a single adult is supposed to take care of four senior citizens, which seems infeasible. Hence, from China's perspective it becomes imperative to explore more options to feed its ever growing older population. In contrast, many studies doubt the rationale of Reverse Mortgage loans. Maurice (1987) analyzed the samples of Reverse Mortgages in California and concluded that the elders who have good income, greater house values and are healthy, are not interested in the Reverse Mortgages programme. Conversely, those elderly, without children, who have lower income and reduced house value and are in adverse health condition, would prefer to join Reverse Mortgage programme. Studies by Feinstein & Fadden (1989) also took a pessimistic attitude about Reverse Mortgages. They noted that lots of elderly people are unwilling to use the house property to increase their current income primarily due to legacy motivation, uncertain life span, health situation and healthcare. Therefore, they concluded that the demand of Reverse Mortgages is insufficient. Venti & Wise (1991) found that Reverse Mortgage is an option of the last resort for the elderly due to the strong legacy motivation. He also concluded that the median elderly home owner benefits by a small percentage increase in income from Reverse Mortgages. A study [1] also concluded that the barriers to acceptance of Reverse Mortgage loans so far have been the lack of consumer awareness regarding the product, high cost of originating fees, the lack of liquidity and diversification for lenders, regulatory and legal uncertainties and concerns over consumer protection. Clarence (2009) questions the need of Reverse Mortgage as a source of supplemental income in the old age by giving an option of intra family sale leaseback as an alternative to Reverse

Mortgage loans. Entering into a Reverse Mortgage contract should be opted only after exploring all other available options from the cost benefit aspect. A major obstacle to using an intrafamily sale leaseback agreement is that many retirees may not have a close heir who is financially able to participate in the arrangement. As a final word, the author states that all the available options should be explored and studied before opting for Reverse Mortgage. A study by Mokoto (2012) found the fear of losing one's property, the associated high costs and psychological reluctance to take debt at older age as some reasons for the slow intake of reverse mortgage loans.

Hypotheses Development

Reverse Mortgage related literature highlighted that the decision to purchase reverse mortgage is influenced by many factors. Modeling those factors into the present study, five constructs are proposed to be affecting the reverse mortgage purchase decision. The model predicts that the decision to opt for a Reverse Mortgage loan is influenced by four factors: i) perception about Reverse Mortgage loans, ii) bequest motive, iii) financial status and iv) risk. Based on the literature review, family ties is found to be affecting the bequest motive. Figure 1 shows a theoretical model of the research. A detailed explanation of the constructs and their relationships present a clearer picture of the research model. This aids the development of working hypotheses for further empirical verification.



Figure 1: Conceptual Framework.

Perception

Perception about any financial product can considerably impact its purchase decision. Therefore, it is expected that if reverse mortgage is perceived as a useful and beneficial product, borrowers would be willing to take it up. Conversely, if viewed as a risky product, borrower would fear losing his property and bequeathing rights, hence resulting in few takers for it. Many previous studies have explored the effect of perception on reverse mortgage purchase decision. Lack of understanding of Reverse Mortgage in the public was the biggest obstacle to its acceptance in Germany [7]. Negative perception of Reverse Mortgage was found to be a major deterrent for the acceptability of Reverse Mortgage loans in India [8]. A study [9] impacted the perception on demand for Reverse Mortgage products and concluded that the potential of Reverse Mortgage to benefit the elderly has been vastly misunderstood. A study [10] found lack of enough product knowledge and complexity of the product to be the primary cause of low demand for Reverse Mortgage loans. Wang (2011) identified factors like weakening of family ties, inadequacies in the banking system and the unnecessary delays in loan sanctioning as contributors to the negative perception about Reverse Mortgage loans in China. Based on the above studies, there is no denying the fact that perception plays a major role in the acceptability for Reverse Mortgage loans worldwide. Hence, perception for Reverse Mortgage is identified as a variable affecting its purchase decision. It is expected that better perception about the product can translate to higher actual use, while negative perception might result in low use. The reviews of the existing studies indicate a positive relationship between perception and the decision to buy a Reverse Mortgage loan.

H1: Perception about Reverse Mortgage Loans positively influences the purchase intention for Reverse Mortgage Loans

Bequest Motive

The inclusion of bequest motive is based on the premise that stronger bequest motives can influence an individual's willingness to opt for reverse mortgage loan. Davidoff (2015) in their study concluded that respondents with higher bequest motive have lesser inclination to opt for a Reverse Mortgage loan and vice versa. A study [11] reverse mortgage in Netherlands and concluded that bequest motive has a significant negative impact on the desire to opt for Reverse Mortgage. The study establishes that those with children and with a strong bequest motive would not consider taking Reverse Mortgage for their retired life inspite of being aware of its many advantages. A study [12] in Netherlands has established a negative relationship between bequest motive and Reverse Mortgage purchase decision. Lockwood (2016) in their research concluded that strong bequest motive significantly affects the purchase of long term care insurance and annuities. In a study [13] the reasons affecting the purchase decision for Reverse Mortgage loan. The author built a model of consumption and housing choices for retired homeowners and the results show that bequest and precautionary savings motives have difficulty generating the high homeownership rates. A study [14] concluded that bequest motive might result in increased demand for Reverse Mortgages. Elderly, with a view to transfer wealth from one generation to the other might infact consider reverse mortgage as the ideal instrument so that their house can be looked after by their children after their demise. A study [6] conclude that in addition to precautionary savings motive arising in the later years in life, bequest motive also plays an important role to explain the

reluctance of retirees to encash their illiquid wealth. These studies help in identifying bequest motive as one of the determinant affecting the reverse mortgage purchase decision. It is expected that stronger bequest motive will lead to reduced demand for reverse mortgage. The reviews of the existing studies indicate a negative relationship between bequest motive and the decision to buy a Reverse Mortgage loan. Hence, this study hypothesizes:

H2: Bequest Motive negatively influences the purchase intention for Reverse Mortgage Loans

Family Ties

Family ties refer to the strength of bonding with one's family. A study conducted by Knapp (2001) found that family ties and migration patterns in the community affect the bequest motive. The author argues that in areas where the bequest motive is relatively prominent, the demand for reverse mortgage is ideally low. He studied the geographical proximity of the children with their parents and concludes that strong family ties affect the bequest motive. He states that the further a child lives away from his parents, the weaker would be the family ties and hence the bequest motive would also be adversely affected. Conversely with parents living in the same vicinity as their children, the intergenerational ties would be stronger and hence the parents would want to leave their physical property for their children. Based on the above study, it is evident that strong family ties negatively affect the bequest motive. Hence, this aspect is also explored in the present study.

H3: Family Ties positively influences the bequest motive decision.

Savings Level

The need for reverse mortgage is dependent upon the analysis of one's financial health post retirement. Matic (2010) says that Reverse Mortgage loans should not be taken by elderly having higher investment or savings amount. He concludes that the elderly home owners, who have little or no current income, do not qualify for a home loan. Therefore, as a last resort, if they opt for Reverse Mortgage loans, they would experience a substantial relative increase in their income flow. A study [13] says that lower savings could incentivize the elderly to finance their retirement consumption by opting for Reverse Mortgage. Based on these studies, financial savings has been identified as one of the determinant affecting the Reverse Mortgage purchase decision.

H4: Financial Status/Savings Level negatively influences the purchase intention for Reverse Mortgage Loans.

Risk

Risk assessment of a financial product is the initial step to decide upon its purchase. Many studies conducted worldwide have explored the risk aspect in reverse mortgage. Shiller & Weiss (2000) state that Reverse Mortgages are long period loans and are laced with lots of uncertain factors and risks, for example, life span risks, moral risks, interest rate risk and house value fluctuation. Cho et al (2013) studied the various Reverse Mortgage products with respect to their risks and profitability from the lender's perspective. In particular, they have investigated the impact of risks like price risk, interest rate risk and termination risk on both the lump sum and annuity Reverse Mortgages options. For this they have applied a stochastic modeling approach to study the pricing of

Reverse Mortgage cash flows over the years. A study [7] has focused on the cross over risk in detail. It concludes that because lump sum mortgages start with higher loan values, they reach the cross over point earlier. Cross over risk is also found to increase with longer life spans. The prime contributor to crossover risk is the long term appreciation rate of residential property. The assumption regarding the appreciation rate of real estate could prove to be the crucial factor in the development of Reverse Mortgage products. Risk is an inherent feature of any financial product. In a study [11] the view that the potential risks such as interest rate risks, longevity risk and moral hazard limit the lending institution's intention in advancing Reverse Mortgage loans. Clements (2015) has stressed on the risk factor embedded in Reverse Mortgage loans and warns the borrowers to go through every detail in the product before opting for it. Huffman (2015) brings forth the risk in Reverse Mortgage loans and advises that the elderly should opt for this product only with a word of caution. Catherine et al (2010) have in their research report studied the Australian markets with reference to the Reverse Mortgage opportunities and challenges. They found that even though Reverse Mortgage is successful in Australia, yet owing to the nature of the product itself and the target beneficiaries; it presents a number of risks. Sun (2015) has studied the longevity risk in Reverse Mortgage products in China and suggested the use of securitization through survivor bonds to manage that risk. A study [15] agrees that the buying decision for Reverse Mortgage loans is influenced by the understanding of the risk characteristics. Based on the above reviews, risk is been identified as negatively affecting the Reverse Mortgage purchase decision.

H5: Risk negatively influences the purchase intention for Reverse Mortgage Loans.

METHODOLOGY

Research Instrument

After the identification of indicators from the review of literature, a Likert scale questionnaire (Table 1) was designed for the primary survey. The 5-point Likert scale (strongly disagree, disagree, neutral, agree and strongly agree) questionnaire contained 28 statements covering all the variables.

Table 1: Construct Development.

| Construct | Indicators | Sources |
|----------------|---|---|
| Family Ties | <ul style="list-style-type: none"> • I would want to stay with my children post retirement as I am very attached to them- status quo bias | Knapp (2001) |
| | <ul style="list-style-type: none"> • There can be increased family tension if I opt for Reverse Mortgage | |
| | <ul style="list-style-type: none"> • Family ties will be weakened by Reverse Mortgage | |
| | <ul style="list-style-type: none"> • My children would not welcome the idea of Reverse Mortgage | |
| Bequest Motive | <ul style="list-style-type: none"> • I will not opt for Reverse Mortgage Programme as I will give my properties to my successors- endowment bias | Lockwood(2016), Coco et al (2015), Dillingh et al (2015), Davidoff (2014) , Nakijama & Telyukova (2013), Knapp (2001) |
| | <ul style="list-style-type: none"> • I believe that my children have the right to inherit my property- | |
| | <ul style="list-style-type: none"> • My house is the only place for my children to stay in | |
| | <ul style="list-style-type: none"> • I think the Reverse Mortgage programme will be a burden on my successors – regret | |

| | | |
|---|---|--|
| | aversion bias | |
| Perception about reverse mortgage loans | <ul style="list-style-type: none"> It will accumulate debt in the old age by opting for Reverse Mortgage – debt aversion bias. | Davidoff et al (2014) , Dasgupta & Daptardar (2014), Lang (2008), Wang (2011), Reed (2009) |
| | <ul style="list-style-type: none"> It is very complex and difficult to understand.- familiarity bias | |
| | <ul style="list-style-type: none"> It is more suitable to the international markets. I might lose my home to the lender by opting for Reverse Mortgage – loss aversion bias | |
| | <ul style="list-style-type: none"> Reverse Mortgage is an expensive loan option. | |
| | <ul style="list-style-type: none"> I understand Reverse Mortgage and will recommend the product to my relatives, friends and family | |
| Risk | <ul style="list-style-type: none"> Opting for Reverse Mortgage is a risky option. | Pahuja (2016), Clements (2015) , Huffman (2015), Sun (2015), Dillingh et al (2013) |
| | <ul style="list-style-type: none"> The rising interest costs can significantly reduce the inheritance I intend to leave behind. | |
| | <ul style="list-style-type: none"> My spouse/heir might have to sell the house to pay for the rising debt in Reverse Mortgage loan | |
| | <ul style="list-style-type: none"> In case of interest rate hike, the increasing interest can erode the equity in my house. | |
| Financial Status/Savings level | <ul style="list-style-type: none"> I have already invested in retirement products to take care of my need | Cocco (2015), Matic (2009) |
| | <ul style="list-style-type: none"> I have sufficient medical cover to take care of my old age medical needs | |

| | | |
|--|---|--|
| | <ul style="list-style-type: none"> • My investments will help me maintain the same standard of living in my old age | |
| | <ul style="list-style-type: none"> • The pension/returns that I will receive in the future will be sufficient post retirement | |
| | <ul style="list-style-type: none"> • There is no need to take Reverse Mortgage as I will be financially sound in my old age- overconfidence bias | |

Research Design and Data Collection

Purposive sampling was used to collect data from 360 respondents through structured questionnaire. The target respondents were people above the age of 30 and owing a house, residing in various cities of India. After rectifying the questionnaire for missing data and outliers, 310 usable responses were employed for further analysis. The sample size is adequate for PLS- SEM analysis. The rule for determining the minimum sample size in PLS SEM is to multiply 10 times “the largest number of structural paths directed at a particular construct in the structural model” (Gaskin & Laury, 2014). Since, the largest number of structural paths in the present study is 6, thus the minimum sample size required is 60.

Data Analysis

Data analysis was done using Partial least square (PLS) technique using the SmartPLS 2.0 software. The results from the Shapiro-Wilk test show that all variables have p values less than 0.05; thereby concluding that data is not normal is not suitable for the application of CB-SEM. Thus, PLS-SEM was used as the analysis techniques. Following the two stage analytical process [16] for PLS-SEM, data analysis was done in two steps: measurement model was assessed for validity and reliability of all the constructs followed

by structural assessment. The path coefficients were generated using the bootstrapping method. Based on the t-statistics output, the significance of each relationship is determined.

RESULTS

Assessment of Measurement Model

Reliability and validity: The measurement model studies the relationship between the latent variables and the indicators. The measurement model is tested through the assessment of reliability and validity of the constructs.

Reliability Measures

Indicator reliability: Indicator reliability is a measure of the commonality amongst the indicators captured by the construct. Indicators are assumed to be reliable if the absolute factor loadings are higher than 0.7. For a minimum loading of 0.7, factor reliability is acceptable at approximately at 0.5 (square of the outer loading, assuming minimum being (0.7^2)) (Hulland, 1999). Table 2 is the final table of the retained indicators with their loadings. All these final constructs are meeting the minimum threshold of 0.7 of factor loadings. As presented in Table1, items having loadings below 0.40 were deleted from the model. Items having loadings between 0.40 and 0.70 were deleted only if composite reliability and Average Variance Extracted (AVE) showed an increase post deletion [16]. Out of six indicators that exhibited loadings < 0.4 , five were deleted and one was retained.

Table 1: Final table of retained indicators with their loadings.

| Construct | Item | Loadings |
|---|------|----------|
| Dependent Variable | | |
| Purchase Intention for Reverse Mortgage Loans | P1 | 0.763 |

| | | |
|--------------------------------------|-----|--------|
| | P2 | 0.758 |
| | P3 | 0.839 |
| | P4 | 0.786 |
| | P6 | 0.8 |
| Independent Variables | | |
| Perception of Reverse Mortgage Loans | PC5 | 0.7002 |
| | PC6 | 0.915 |
| Family Ties | FT3 | 0.937 |
| | FT4 | 0.656 |
| Bequest Motive | BM1 | 0.792 |
| | BM2 | 0.833 |
| | BM3 | 0.766 |
| | BM4 | 0.831 |
| Savings Level | SL1 | 0.936 |
| | SL2 | 0.919 |
| | SL3 | 0.861 |
| | SL4 | 0.7 |
| Risk | R2 | 0.823 |
| | R3 | 0.947 |
| | R4 | 0.811 |

Internal consistency: Traditionally, an item's internal consistency is evaluated using Cronbach's Alpha. However, in PLS- SEM, internal consistency is measured using composite reliability. As suggested in a study [17], composite reliability of 0.7 or higher is acceptable. Table 3 shows the internal consistency data for all the constructs. As per the requirement, all the constructs are meeting the minimum threshold of 0.7.

Table 3: Internal Consistency.

| Dependent Variable | |
|---|--------|
| Purchase Intention for Reverse Mortgage Loans | 0.8895 |
| Independent Variable | |
| Perception | 0.7953 |
| Family Ties | 0.7856 |
| Bequest Motive | 0.8809 |
| Savings Level | 0.9174 |
| Risk | 0.8805 |

Validity Measures

Convergent validity is the extent to which an indicator correlates positively with the other indicator of the same construct. Existence of convergent validity is assessed by studying the variance extracted for each factor. Convergent validity is established, if the AVE (Average Value Extracted) is at least 0.5 [17]. Table 4 shows that AVE of all the constructs is above 0.5, indicating sufficient convergent validity.

Table 4: Convergent Validity.

| Construct | AVE (Average Variance Extracted) |
|---|---|
| Dependent Variable | |
| Purchase Intention for Reverse Mortgage loans | 0.6171 |
| Independent Variable | |
| Perception | 0.6642 |

| | |
|----------------|--------|
| Family Ties | 0.6538 |
| Bequest Motive | 0.6493 |
| Savings Level | 0.7376 |
| Risk | 0.7873 |

Discriminant validity: Discriminant validity is measurement of the degree to which a construct differs from any other construct in the study. Discriminant validity is established if the square root of AVE of each latent variable is greater than the correlations among the latent variables (Kwong & Wong, 2013). Table 5 shows the square root of AVE printed diagonally in bold and the non-diagonal elements represent the inter correlation values between constructs. Since all the off-diagonal elements are lower than square roots of AVE, it is confirmed that all the constructs meet the discriminant validity criteria.

Thus, the reliability and validity tests conducted on the measurement model are satisfactory. The reliability and validity tests confirm that the model is valid for study and that the parameters of structural model can further be applied to it.

Table 5: Discriminant Validity, AVE criteria.

| Constructs | Bequest Motive | Family Ties | Perception | Purchase Intention | Risk | Savings Level |
|--------------------|----------------|--------------|--------------|--------------------|--------------|---------------|
| Bequest Motive | 0.806 | 0 | 0 | 0 | 0 | 0 |
| Family Ties | 0.609 | 0.809 | 0 | 0 | 0 | 0 |
| Perception | 0.279 | 0.134 | 0.815 | 0 | 0 | 0 |
| Purchase Intention | 0.279 | 0.192 | 0.589 | 0.786 | 0 | 0 |
| Risk | 0.044 | 0.063 | 0.132 | 0.205 | 0.887 | 0 |

| | | | | | | |
|---------------|-------|-------|-------|-------|-------|--------------|
| Savings Level | 0.185 | 0.262 | 0.048 | 0.183 | 0.237 | 0.859 |
|---------------|-------|-------|-------|-------|-------|--------------|

STRUCTURAL MODEL EVALUATION

Collinearity Analysis

Before proceeding with the significance analysis, the structural model needs to be examined for collinearity. In PLS SEM, presence of collinearity amongst the predictor constructs might affect the values of the path coefficients and therefore is not a desirable feature. Thus, all the independent variables are checked for the presence of collinearity/multicollinearity amongst them. The latent variable score taken from the PLS Algorithm report is run in SPSS to check for collinearity. Table 6 shows the collinearity values for the predictor constructs. Since the VIF values of all the constructs is <5.00 and the tolerance levels are above 0.2, it can be concluded that collinearity does not exist amongst the predictor variables and we can proceed with further analysis.

Table 6: VIF Values.

| Construct | Collinearity Statistics | |
|----------------|-------------------------|-------|
| | Tolerance | VIF |
| Perception | .905 | 1.105 |
| Family Ties | .555 | 1.802 |
| Bequest Motive | .568 | 1.762 |

| | | |
|---------------|------|-------|
| Savings Level | .785 | 1.275 |
| Risk | .918 | 1.089 |

Path Coefficients

The path coefficients have standardized values between +1 and -1. Estimated values closer to +1 represent strong relationships between the variables (and vice versa) that are almost always statistically significant. Table 7 lists down the path coefficients, observed t-statistics, p value and the significance level for all hypothesized path. Upon assessing the path coefficients, all the proposed hypotheses are supported. From the analysis, four of the supported hypotheses are significant at the level of 0.05 (*) and one hypotheses is significant at the level of 0.10 (**). Path coefficients are values of path relationships in the structural model with standardized values between +1 and -1. As presented in Table 4 the path coefficient H1, H2, H3 and H4 are statistically significant with an effect on the reverse mortgage purchase decision in India (at the chosen 5% level of significance) while H5 is also significant (at 1% level of significance). Thus, hypotheses H1, H2, H3, H4 and H5 are accepted.

Table 7: Path coefficients and p value.

| Hypotheses | Paths | Path Coefficients | t values | p value | Significance Levels | Decision |
|------------|-------------------------------------|-------------------|----------|---------|---------------------|-----------|
| H1 | Perception → Purchase Intention | 0.541 | 9.512 | .000 | * | Supported |
| H2 | Bequest Motive → Purchase Intention | 0.103 | 1.679 | 0.046 | * | Supported |
| H3 | Family Ties → Bequest Motive | 0.609 | 13.423 | .000 | * | Supported |

| | | | | | | |
|----|------------------------------------|-------|-------|-------|----|-----------|
| H4 | Savings Level → Purchase Intention | 0.114 | 1.964 | 0.026 | * | Supported |
| H5 | Risk → Purchase Intention | 0.102 | 1.520 | 0.065 | ** | Supported |

Notes: * $p < 0.05$, ** $p < 0.10$

Predictive Accuracy

The goal of PLS SEM is not only to check for the significant relationships, but to also focus on the significant and relevant effects between the dependent and the independent variables. Predictive accuracy is checked by studying the R^2 and the effect Size f^2 values.

Coefficient of Determination (R^2)

R^2 value is indicative of the model's accuracy and is the most common statistic representing the effect of the independent variables on the dependent variable. Table 8 shows that bequest motive, perception, risk and savings level explain 38.7% of the variance in the intention to purchase Reverse Mortgage loans. Family ties explain 37.1 of the variance in bequest motive. R^2 values of 0.20 are considered high in disciplines such as consumer behavior [16]. As the values in the given model are above the acceptable threshold limit, it can be safely concluded that the model exhibits predictive accuracy and the variance in the dependent variables is well explained by the independent variables.

Table 8: R^2 values.

| Dependent Variable | R^2 | Independent Variable explaining the R^2 value |
|---|-------|---|
| Purchase Intention for Reverse Mortgage Loans | 0.387 | Bequest Motive |
| | | Savings Level |
| | | Perception of Reverse Mortgage |

| | | |
|----------------|-------|-------------|
| | | Risk |
| Bequest Motive | 0.371 | Family Ties |

Source: On the basis of PLS 2.0 output.

Effect Size f^2 :

The effect size f^2 studies the change in the R^2 values after omitting every independent variable from the model to study whether the omitted variable has a substantial effect on the dependent variable or not. Table 9 shows the effect sizes f^2 of bequest motive, financial savings, risk and family ties are considered weak. Amongst the five predictors, perception for reverse mortgage has the largest effect size (0.434) and bequest motive has the weakest effect size (0.002). Therefore we can safely conclude that perception about Reverse Mortgage affects the decision to purchase Reverse Mortgage loans the maximum.

Table 9: f^2 Effect Size.

| Independent Variable | R^2 Included | R^2 Excluded | f^2 | Effect Size |
|---|----------------|----------------|-------|-------------|
| Perception about Reverse Mortgage Loans | 0.387 | 0.121 | 0.434 | Large |
| Bequest Motive | 0.371 | 0.369 | 0.002 | Small |
| Savings Level | 0.387 | 0.374 | 0.021 | Small |
| Risk | 0.387 | 0.380 | 0.011 | Small |

Source: On the basis of PLS 2.0 output.

Predictive Relevance

Apart from estimating the predictive accuracy for the model through R^2 , Stone- Geisser's q^2 effect size is also calculated to measure the model's predictive relevance [16].

q² Effect Size

Similar to calculation of f² values, the relative impact of the predictive relevance can be studied by computing the q² effect size. In Table 10, the q² effect size of the variable, perception for Reverse Mortgage has a large predictive relevance for the dependent construct – purchase intention of Reverse Mortgage loans. The other variables have very little predictive relevance for the dependent variable.

Table 10: q² Effect size.

| Independent Variables | Q² Included | Q² Excluded | q² | Effect Size |
|-----------------------------------|-------------------------------|-------------------------------|----------------------|--------------------|
| Perception about Reverse Mortgage | 0.2319 | 0.073 | 0.207 | Large |
| Bequest Motive | 0.2319 | 0.2139 | 0.023 | Small |
| Financial Status/Savings Level | 0.2319 | 0.2285 | 0.004 | Small |
| Risk | 0.2319 | 0.2244 | 0.01 | Small |

Source: On the basis of PLS 2.0 output.

DISCUSSION

Summary of Findings

The study provides empirical evidence of the effect of perception, bequest motive, financial savings and risk on the reverse mortgage purchase decision. This study has attempted to overcome the limited studies on determinants of reverse mortgage purchase decision. The relationship between perception for Reverse Mortgage loans and the intention to buy is found to be positively significant. This research result ($\beta=0.544$, $t=9.512$, $p \text{ value}=0.000$) is in line with the existing studies where a direct relationship between the two variables has been studied. One such Indian study [8] concludes that the negative perception of Reverse Mortgage is a major deterrent for its acceptability in

India. The primary reason for the low intake of Reverse Mortgage loans in India is the incorrect/wrong perception of Reverse Mortgage. The fault probably lies with the banks/financial institutions that lack the initiative to educate the clients about this socially beneficial product. The myth that the property once mortgaged, becomes the property of the bank should be dispelled with. In any case, at any point in time, the ownership of the property can be retrieved by paying back the loan. Bequest motive is also found to have a significant negative impact ($\beta=0.103$, $t=1.679$, $p \text{ value}=0.046$) on Reverse Mortgage purchase decision. Studies by Cocco & Lopes, 2015, [6,11] and Kenneth, USA concluded that in cases of strong bequest motive, demand for Reverse Mortgages has been relatively low. This research result needs special consideration, as bequest motive is much stronger and deep rooted in India owing to its culture and traditions. The perception of Indians to regard owned property as a primary asset that should essentially be passed over to the next generations is a reality. Strong bequest motive gives rise to fear that if the property is mortgaged, the successors might lose their right over the property. This belief thereby restricts many potential borrowers from opting for reverse mortgage. Family Ties is found to have a significant negative impact on the bequest motive ($\beta=0.609$, $t=13.423$, $p \text{ value}=0.000$). Previous studies have also established relationship between family ties and the bequest motive. Numerous studies in India have proven time and again about the importance of family ties and its effect on the bequest motive by senior citizens. The stronger the family tie the greater is the bequest motive. Savings level is found to have a significant negative impact ($\beta=0.114$, $t=1.964$, $p \text{ value}=0.026$) on reverse mortgage purchase decision. This conclusion is also in line with the previous studies [13] which stated that in case of lower financial savings Reverse Mortgage could substantially increase the flow of

income to the elderly and take care of their old age needs. However, in India savings for retirement is either in the form of pension or contribution to Provident Fund. Less than 10 percent of senior citizens in India receive pension income. Even those who do get pension benefits, get very less amounts that do not include basic macro-economic realities like inflation. In case of private sector companies, the contribution is optional, hence majority of them do not opt for it. Compared to developed countries, India lacks a social security system that provides acts as a safety net for the elderly in their retirement. In the absence of sufficient savings for old age, this result further reiterates the fact that Reverse Mortgage should be encouraged and implemented as a necessity in India. Risk is found to be significantly positively impacting the reverse mortgage purchase decision ($\beta=0.088$, $t=1.520$, $p \text{ value}=0.065$). A study [18] has the various risks in reverse mortgage and describes it as rising debt instruments". He points interest rate risk as the most substantial as it cannot be fully diversifiable. A study [19] advises that the elderly should opt for this product only with a word of caution. A study [15] agreed that the risk characteristic of the product affected its buying decision.

RECOMMENDATIONS OF THE STUDY

The research findings have meaningful implications for the regulators and the lending/banking institutions.

Implications for the Regulator

The research has proved that negative perception is one of the primary determinants affecting the Reverse Mortgage purchase decision. Hence, to tackle this menace of negative perception, and to make the product more appealing, the following recommendations are suggested:

- Reverse Mortgage should be presented as a viable, temporary fallback option. It can be marketed as an option that provides ready cash to take care of exigencies, and that it can be repaid by the borrower within a predictable time period. This would dispel the fear surrounding the bequeathing of property to their successors, thereby meeting the temporary needs of the elderly and ensuring that the ownership of the property remains with the owner.
- Education and effective counseling can make the elderly appreciate the difference between the vulnerability they feel when tied to traditional loans, as opposed to the emotional, social and psychological comforts that Reverse Mortgage offers.
- The guidelines surrounding the product need to be made more attractive so that more people see it as a viable option. The tenure of the loan should be increased to lifetime as opposed to the 20 years limit now.
- Remedies like providing some flexibility in the age group of borrowers can also be worked upon. As opposed to the present age limit of 60 years, it can be proposed to be offered for 55 years of age and above. This will not only increase the number of target beneficiaries manifold, but will also appeal to a greater workforce.
- The product should have flexibility with regards to tweaking its features/payout structure. This would make the product more effective as it would enable modification in the product with respect to the category of the city (Tier I, II, or III). Thus, the product would have a greater appeal and acceptability amongst the target borrowers.
- The government can appoint a nodal agency to market Reverse Mortgage through brokers/consultants. These brokers/consultants can be motivated to sell Reverse

Mortgage loans via the incentive scheme.

Implications for Banks/Lending Institutions

Lack of sufficient information has been found to be the primary reason behind the negative perception of Reverse Mortgage loans. Hence, the goal of every lending institution be it government/bank, should be to educate and inform the consumer about the importance and need for Reverse Mortgage products.

- The product features should be presented in easy and understandable language in simple English/Hindi with effective illustrations and case studies.
- Banks and Insurance companies can form joint venture and market Reverse Mortgage products on the lines of Banc assurance.
- To make the product viable for banks and lending institutions, effective risk management policies should be explored. In collaboration with Life Insurance companies, options like taking life insurance on the lives of borrowers, subject to the minimum of house value or the outstanding loan amount can be provided. This way, in the event of death of the borrower, realization of proceeds can be hassle free for both the lender as well as to the heirs of the borrowers.
- To sum it all, the idea should be to educate, educate and educate. The goal of every organization be it government/bank/lending should be to educate and inform the consumer about the importance and need for Reverse Mortgage products. Educating would not only create awareness about Reverse Mortgage, but would also dispel their fears about the product. Only if the borrowers are well informed, would they be able to make the decision of opting for the product or not.

CONCLUSION

This study establishes Reverse Mortgage as a necessity. Perception, bequest motive, savings level and risk are the four determinants that have been identified as the determinants influencing the purchase decision for Reverse Mortgage loans. Of the four determinants, perception about Reverse Mortgage loans is found to affect the purchase decision the most. This resonates the fact that primary reason for the low intake of Reverse Mortgage loans is the incorrect/wrong perception of Reverse Mortgage.

The other major factor affecting the purchase intention for Reverse Mortgage loans is bequest motive. Compared to foreign countries, bequest motive is found to be much stronger and deep rooted in developing economies owing to their culture and traditions. Strong bequest motive also gives rise to fear that once the property is mortgaged, the successors loose their right over the property. This belief thereby restricts many potential borrowers from buying the product. Only if the consumers are aware that the property even after being mortgaged, can be retrieved back after paying the dues, will dispel some of the fears of the people. However, here too, awareness about the product is of prime importance. Savings level is identified as the third factor affecting the Reverse Mortgage purchase decision. The study has found that in case the savings in old age are sufficient, the need for supplementary income would not arise, hence the demand for Reverse Mortgage would be low. It is fact that less than 10 percent of the retirees in developing economies receive pension income. Even those who do get pension benefits, get very less amounts that does not provide shield against the rising inflationary costs. In the absence of any social security cover, the need for alternate avenues for supplementing retirement income becomes a necessity. Risk as an inherent aspect of Reverse Mortgage is also

found to be affecting the purchase decision. On the demand side, risks like fear of losing one's property, lender bankruptcy risk might withhold potential borrowers. On the supply side, crossover risk, longevity and interest rate risks are found to have the maximum impact on the buying decision of Reverse Mortgage loans.

LIMITATIONS AND FUTURE WORK

The findings of the study are constrained by certain limitations, which provide opportunities for further research. A primary limitation in the present body of research is the absence of any such work done in the area of Reverse Mortgage in India. Hence, it was a research challenge to implement the international studies in the Indian context owing to the social economic differences amongst countries. Future research can be extended to wider geographical areas to give a better perspective. Further studies might identify the extent to which factors such as age, education level affect the purchase decision for Reverse Mortgage loans.

REFERENCES

1. Mayer CJ, Simons KV (1994) Reverse Mortgages and the Liquidity of Housing Wealth. *Journal of the American Real Estate and Urban Economics Association*, 22: 235-255.
2. Merrill SR, Finkel M, Kutty NK (1994) Potential Beneficiaries from Reverse Mortgage Products for Elderly Home owners: An Analysis of American Housing Survey Data. *Real Estate Economics* 22: 257-299.
3. Jacobs B (1986) The National Potential of Home Equity Conversion. *The Gerontologist* 26: 496-504.

4. Rajagopalan R (2002) Issues in Old Age social and Income Security in India, TAPMI Working Paper Series No. 2003/02, T.A. Pai Management Institute, Manipal.
5. Tripathi GC, Iyer KC (2009) Assessment of Reverse Mortgage Products in Indian Market.
6. Nakajima M, Irina TA (2011) Reverse Mortgage Loans: A Quantitative Analysis. Research Department, Federal Reserve Bank of Philadelphia
7. Huibers WC (2013) Equity Release to supplement pension : Risk analyses of Reverse Mortgages. Master Thesis.
8. Daptardar A, Dasgupta C (2014) Reverse Mortgage in the Indian Housing Market: A Review. IJMBS.
9. Reed R (2009) The increasing use of Reverse Mortgage by older households. 15th Annual Pacific Rim Real Estate Society Conference, Sydney, 18th- 21st January.
10. Davidoff T, Gerhard P, Post T (2015) Reverse Mortgages: What Homeowners (Don't) know and how it Matter.
11. Dillingh R, Prast H, Brancati CU (2015) The Psychology and Economics of Reverse Mortgage Attitudes: Evidence from Netherlands, Netspar.
12. Artle R, Varaiya P (1978) Life Cycle Consumption and Home Ownership. Journal of Economic Theory 18: 38-58.
13. Coco L (2015) Reverse Mortgage Design. Netspar International Pension Workshop.
14. Rasmussen DW, Megbolugbe IF, Morgan BA (1995) Using the 1990 Public Use Microdata Sample to Estimate Potential Demand for Reverse Mortgage

- Products. Journal of housing Research.
15. Pahuja A, Sanjeev R (2016) Reverse Mortgage: An Empirical Study in Indian perspective International Journal of Banking, Risk and Insurance, 4 (2).
 16. Hair Jr JF, Ringle C, Sarstedt M (2013) A primer on partial least squares Structural equation modeling (PLS-SEM): SAGE Publications, Incorporated.
 17. Fornell C, Larcker DF (1981) Evaluating structural equation models with unobservable and measurement error. Journal of Marketing Research 34: 161-188.
 18. Rajagopalan R (2006) Reverse Mortgage products for the Indian Market: An exploration of Issues. Bimaquest.
 19. Mark H (2015) Can You Lose Your Home with a Reverse Mortgage? huffman/mindsets (Part 1).