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**THE IMPACT OF MICROCREDIT AND PERSONAL EMPOWERMENT ON  
WOMEN BORROWER'S QUALITY OF LIFE IN PAKISTAN**

**SANA FAYYAZ**



**UUM**  
Universiti Utara Malaysia

**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA  
2017**

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WOMEN BORROWER'S QUALITY OF LIFE IN PAKISTAN**

**By**

**SANA FAYYAZ**



**UUM**  
Universiti Utara Malaysia

**Thesis Submitted to  
Othman Yeop Abdullah Graduate School of Business,  
Universiti Utara Malaysia,  
in Fulfilment of the Requirement for the Degree of Doctor of Philosophy**



**Kolej Perniagaan**  
(College of Business)  
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Tandatangan  
(Signature)

Pemeriksa Luar : Prof. Dr. Er Ah Choy  
(External Examiner)

Tandatangan  
(Signature)

Pemeriksa Dalam : Prof. Dr. Mohd Zaini Abd Karim  
(Internal Examiner)

Tandatangan  
(Signature)

Tarikh: 26 September 2017

(Date) 05 Muharam 1439

Nama Pelajar  
(Name of Student) : Sana Fayyaz

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Of Women Borrower's Quality of Life In Pakistan**

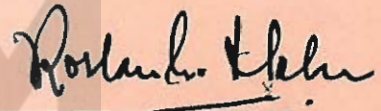
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Program Pengajian  
(Programme of Study) : Doctor Of Philosophy (Industrial & Development Economics)

---

Nama Penyelia/Penyelia-penyelia  
(Name of Supervisor/Supervisors) : Prof. Dr. Roslan Abdul Hakim

---



Tandatangan

Nama Penyelia/Penyelia-penyelia  
(Name of Supervisor/Supervisors) : Dr. Shazida Jan Mohd Khan

---



Tandatangan



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## ABSTRACT

Improving the quality life of the marginalized poor women is one of the major development issues in Pakistan. In this regard, the microcredit program seems to provide a practical solution to improve their quality of life. Nevertheless, owing to many socio-cultural factors that limit their personal empowerment and accessibility to microcredit, the effectiveness of microcredit in improving their quality of life is an issue. The study therefore, aims to estimate the impact of microcredit and personal empowerment on the quality of life of women in Pakistan. Towards this end, primary data has been gathered by using a survey questionnaire. A stratified random sampling technique has been used to collect data from 400 women borrowers in Bahawalpur, Pakistan, who has taken microcredit from three major microcredit institutions - Khushhali Bank Limited, Tameer Microfinance Bank and National Rural Support Program Bank. The data analysis has been carried out using the Multinomial Logit Model. The findings of the study shows that microcredit which is measured by loan duration, loan size and training, is found to be significant in explaining the quality life of the women borrowers. Interestingly, personal empowerment is also found to have a significant relationship with quality of life. Furthermore, the economic decision making domain of personal empowerment is also found to be significant in explaining the quality life of the women borrowers. The study concludes that the effort to improve the quality of life of women in Pakistan should not be focused just on the accessibility of credit to them. It must come simultaneously with advancing their personal empowerment. This can be done through improving their economic decision- making ability such as improvement in the level of education, ability to move freely and reducing the socio-cultural-political barriers that hinder them from realizing their full potential of personal empowerment.

**Keywords:** microcredit, personal empowerment, quality of life, women borrowers, Pakistan.

## ABSTRAK

Meningkatkan kualiti hidup wanita miskin dan terpinggir merupakan salah satu isu utama pembangunan di Pakistan. Dalam hal ini, program mikro Kredit boleh memberikan penyelesaian praktikal untuk meningkatkan kualiti hidup mereka. Walau bagaimanapun, oleh kerana wanita di Pakistan menghadapi banyak halangan sosio-budaya yang membatasi pemberdayaan peribadi mereka dan kebolehcapaian mereka kepada mikro Kredit, maka keberkesanan mikro Kredit dalam meningkatkan kualiti hidup mereka menjadi isu yang penting. Tujuan kajian ini adalah untuk meneliti kesan mikro Kredit dan pemberdayaan peribadi terhadap kualiti hidup wanita di Pakistan. Bagi mencapai matlamat ini, data dikumpulkan dengan menggunakan soal selidik. Teknik pensampelan rawak berstrata digunakan untuk mengumpul data daripada 400 orang peminjam wanita di Bahawalpur, Pakistan. Mereka ini mengambil mikro Kredit daripada tiga institusi mikro Kredit utama iaitu Khushhali Bank Limited, Bank Kewangan Mikro Tameer dan Program Sokongan Luar Bandar Kebangsaan. Analisis telah dijalankan menggunakan Model Logit Multinomial. Penemuan kajian menunjukkan bahawa mikro Kredit yang diukur dengan tempoh pinjaman, saiz pinjaman dan latihan didapati signifikan dalam menjelaskan kualiti hidup peminjam wanita. Faktor pemberdayaan peribadi juga didapati mempunyai hubungan yang signifikan dengan kualiti hidup. Selain itu, domain membuat keputusan ekonomi dalam pemberdayaan peribadi juga didapati penting dalam menjelaskan kualiti kehidupan peminjam wanita. Kajian ini membuat kesimpulan bahawa dalam usaha meningkatkan kualiti hidup wanita di Pakistan fokus tidak seharusnya hanya kepada pemberian kemudahan kredit kepada mereka. Ianya mesti diiringi bersama-sama dengan meningkatkan pemberdayaan peribadi mereka. Ini boleh dilakukan dengan meningkatkan keupayaan membuat keputusan ekonomi mereka seperti peningkatan dalam tahap pendidikan, keupayaan untuk bergerak bebas dan mengurangkan halangan sosio-budaya yang membatasi mereka daripada mencapai potensi pemberdayaan peribadi mereka sepenuhnya.

**Kata kunci:** Mikro Kredit, pemberdayaan peribadi, kualiti hidup, peminjam wanita, Pakistan.



## ACKNOWLEDGEMENTS

First and foremost, my profound gratitude is due to Almighty Allah, the most beneficent, the most merciful, who has made it possible for me to attain this lofty weight in my academic career.

I would like to express my appreciation and deepest gratitude to my supervisor: Professor Dr. Roslan Abdul Hakim for his encouragement, support and training towards the accomplishment of this work. I am thankful to him for devoting his time in reading my work always, and making useful criticisms which improve its overall quality. I would like to express my thanks to my co-supervisor Dr. Shazida Jan Binti Mohd Khan for her comments which help to improve my work.

I would like also to thank my Parents (Kousar Shaheen & Fayyaz Ahmed), my sisters (Sadaf, Ayesha & Asifa) for their love and especially my brother (Muhammad Ali) who supported me. My goal would not have achieved without them. I dedicated this work to my mother.

I had a very enjoyable study at University Utara Malaysia (UUM). Not only, does it has a beautiful natural environment, but the university also has help staff.

Finally, I would like to thank all of my friends especially my friends Fatima Nazim Bukhari and Dr. Areeba Khan for their encouragement during my study.

Sana Fayyaz

Othman Yeop Abdullah (OYA) Graduate School of Business

Universiti Utara Malaysia,

06010 UUM Sintok, Kedah,

Malaysia.

12<sup>th</sup> December, 2017

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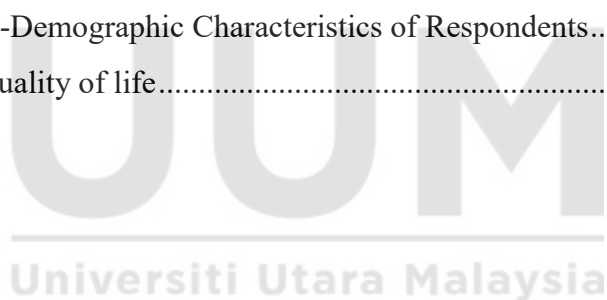
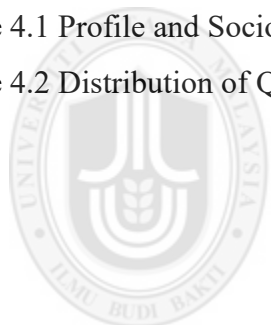
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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The quality of life is rapidly gaining global attention due to poverty that almost engulfs developing countries today. According to the World Bank the high and low quality of life are attributed to the income of the individuals in the society. The income of the household determines the quality of life where the lower the income of the household the lower the quality of life as asserted by the report from the World Bank (World Bank, 2015). As argued by many scholars the quality of life is the ability of an individual to cater to their basic needs of life which include, but not limited to food security, education, shelter, health care and other family needs (Iqbal, Hassan, & Mahmood, 2015; Armanmehr, Shahghasemi, Alami, Moradi, & Rezaeian, 2016; Mir, Wani, & Sankar, 2017).

Quality of life depends on so many indicators in which the most popular is the per capita income that is used mostly by the World Bank to measure the standard of living of the citizens of a particular country. The said per capita income is seen as a measurement of the quality of life since the quality of life and the standard of living are synonymous in nature. Going by the nature of the problem of low quality of life, one can realize that poverty attributed to low income has a severe effect on the quality of life of every citizen of a given country. Therefore, poverty is common in developing countries due to the low income of the households which is said to be one of the factors that contribute to the lower quality of life among individuals globally (Mas, Baqués, Balcells-Balcells, Dalmau, Giné, Gràcia, & Vilaseca, 2016). To address the low quality of life in our societies today, many programs were organized by the United Nations Development Program (UNDP) and the International Financial Institutions (IFIs). In particular, the World Bank and the United Nations pushed

the millennium development goals that serve as poverty alleviation to the policy to the forefront (World Bank, 2013). The main issue is that these millennium goals are to address poverty and improve the quality of life by using small and medium loans which increase income and thus further increase the quality of life.

Besides all these programs, the low quality of life is still low and women are more affected in this situation. This is because most of the women in developing countries are dependent, especially in those Muslim dominated countries where the women depend on the men. According to the United Nations Development Report (1997) 70 percent of the poorest citizens of the world are women and their quality of life is lower than their counterparts. No wonder, the mortality rate of women compared to that of men is higher as reported by the World Bank (2013). Since women outnumber men in most of the developing countries, supporting women to improve and earn more income makes it possible to fulfill the needs of their family which, in turn, leads to greater quality of their lives; hence addressing the issue of quality of life globally.

Nowadays, the main challenge that underdeveloped countries are facing is the poor quality of life especially of the women. The role of quality of life among woman has been studied by many researches in several countries to see the relationship between quality of life and microcredit. Microcredit is presumed to be a crucial source for improving the quality of life. Microcredit is measured by loan duration, training and loan size. So microcredit is widely recognized as a major source of growth of underdeveloped countries (Austen & Leonard, 2008; Greco *et al.*, 2015). Ostensibly, the more the quality of life of women, the better the society. However, women are mostly ignored in many countries and Pakistan is not in isolation. The women face many challenges and obstacles which hinder their

performance in terms of income generation and that plays a significant role in every aspect of their lives.

According to the Human Development Report (2015) Pakistan is the world's 6<sup>th</sup> largest country by population. The total estimated population of the country in July 2015 was 199,085,847 million with the sex ratio of 1.08 males per female (World Fact Book, 2015). This clearly conveys the message that almost half of the country's population comprises women. Despite such a large proportion of women, Pakistan, based on the gender empowerment measure (GEM) is ranked 99<sup>th</sup> amongst 109 countries in the world (Human Development Report, 2015). The total population of Punjab province (state) is 100.6 million, while the population of Southern Punjab is 39 million.

Unfortunately, Pakistan ranks third in the list of the most dangerous countries for woman's survival in the whole world, while Afghanistan is first and Congo is second in the rank respectively (The Express Tribune Pakistan, 2011). In Pakistan women are struggling daily for their basic rights, self-recognition and respect; nearly 1,000 women were killed in 2011 in the name of "Honor" if they raised their voice (Pakistan Human Rights Commission, 2012). Pakistan is ranked 141 out of 142 countries in the Global Gender Gap Indexing (2014). This is disclosed in the reports which considered some of the indicators of the measurement that has been explained in the given Table 1.1 below.

Table 1.1  
*Quality of Life Index and Human Development Index of Pakistan*

<b>Indicators</b>	<b>Rank</b>	<b>Percentage (%)</b>
Quality of Life Index (QOLI)	93/ 111	
Human Development Index (HDI)	147/ 188	
Gender Inequality Index (GII)	121/ 188	
Global Gender Gap Index (GGGI)	141/142	
Multidimensional Poverty Index (MPI)	36/ 149	
Population in usual Multidimensional Poverty (MPI)		45.6%
Deprivation rate of basic facilities		52%
Population near to multidimensional poverty		15%
Severe multidimensional poverty		26.5%
Bad health		32%
Poor education		36%
Low living standard		31.60%
Labour force participation of women		24.40%
Ratio of poor women in rural areas		70 %
Share of women in household activities		79 %

Source: Quality of Life Index (2015) and Human Development Index (HDI) (2015).

Pakistan ranks 93<sup>rd</sup> out of 111<sup>st</sup> countries in the quality of life index, while the Human Development Index category lies at the 147<sup>th</sup> rank out of 188<sup>th</sup> countries, whereas the Gender Inequality Index (GII) and the Global Gender Gap Index (GGGI) rank 121<sup>st</sup> out of 188<sup>th</sup> countries and 141<sup>st</sup> out of 142<sup>nd</sup> countries respectively in the world as seen in Table 1.1. Due to this, Pakistan falls in the multidimensional poverty index (MPI) rank of 36<sup>th</sup> out of 149 which means that 45.6 percent of the population suffer multidimensional poverty with the intensity deprivation rate of 52 percent of basic facilities, in which population near to multidimensional poverty is 15 percent and population in severe multidimensional poverty is 26.5 percent. Therefore, according to the Human Development Index Report (2015) Pakistan had a bad health rate of 32 percent, a 36 percent rate of poor education and an overall low living standard rate of 31.6 percent. In the light of this crucial reality the labor participation of women was 24.40 percent. On the other hand, the ratio of poor

women who lived in rural areas was 70 percent and the share of the women in household activities was 79 percent.

Despite the fact that the critical value of the indicators of the quality of life in Pakistan is still stagnant as years before, in the report of Thomson Reuters Foundation (2011) it was disclosed that the women dependency ratio is increasing rapidly and that affects their quality of life. Hence, there is a need to support women in order to increase their income which, in turn, reduces the dependency ratio. This issue is very common to the society in Pakistan, where economic constraints of women, especially their personal income affects their quality of life (Kousar, 2010).

Conclusively, from the above mentioned condition of women in Pakistan, the microcredit is a small loan that is provided to small scale borrowers, especially to women and small scale businesses that do not have access to banking and other associated services. The two primary instruments for customers to get financial services are: (a) banking for individuals and small scale or micro level businesses and (b) group- supported programs, where a few people meet up to request for loans and different services as a set of individuals. In a few areas, for example in Pakistan and Southern Africa, microcredit is used for the procurement of loans for poor individuals, which is alike the finance program persistent in conventional banking (Christen, Rosenberg, & Jayadeva, 2004).

Moreover, microcredit lifts individuals out of poverty in developing economies, particularly in provincial ranges, because in underdeveloped countries, in conventional banking, cash is not used for the poor people. So, the microcredit services fulfill the requirements of the poor to help them to escape from their poverty and have a good quality of life. Traditionally, females are financially dependent on males. Most of the developed



and underdeveloped countries have male dominant societies that impose various boundaries on females. They neither travel outdoors nor are allowed to have social contact with male individuals of the community. When females have their own income, psychologically, they feel more secure because of this independence and this leads them towards a good quality of life (Feigenberg, Field, & Pande, 2010; Yasmeen & Karim, 2014).

Hence, there is the need to reduce the fluctuation of chances and access to the assets among men and women that is common everywhere throughout the world, but are more common in deprived developing countries. On the whole, women's function is as imperative as a man's position in giving power to the family and the growth of the nation. Apart from this, women are also eligible for equal privileges and benefits as their partners, nevertheless the developing countries present a different situation. There is an inborn difficulty that stops women from contributing to the decision-making process and thus, deny them a good quality of life (Rehman, 2007). Several empirical studies have been carried out to assess the key determinants that explain the quality of life in a given scenario, but they have not obtained consonance in their results. In fact many researchers revealed significant relationships with certain determinants such as loan duration, training and loan size with the quality of life in the case of developing nations (Subramaniam, Maaniam, & Ali, 2013; Ali, Ali, & Suubhan, 2015)

Therefore, working women are not only contributing to the state revenue, but also playing a very important role in maintaining a stable living along with the quality of life of the households and society. Women in developed countries participate in the earnings of their nations than the women in underdeveloped countries like Pakistan. In emerging nations

like Pakistan, especially in the rural areas, women are having numerous lawful hindrances in raising the quality of life (Yasmeen & Karim, 2014).

Moreover, there are certain factors that have been ignored in previous studies such as women being at a greater threat in terms of financial stability and occupation. Women living in a male- overwhelmed culture, have less opportunity to grow especially in emerging countries. They have rising disparity in various societal and civilizing modes. It is due to the effect of many variables such as the absence of education, unemployment, marriage at young age and family hostility which hinder women from achieving better elevation. Furthermore, the low status of women is due to not only societal norms but also it is engrained in the governmental and financial structure, which should be changed for the development of its citizens. Women have to put in effort to sustain the family but this is not acknowledged as physical work. Yet, they have low income due to their low performance in economic activities that are linked to difficulties in accessing credit, thus their quality of life is in danger (Rehman, 2007).

There are key reasons why women of a developing country, like Pakistan, confront the trouble of accessing capital in the form of credit at the local level. They also have a high risk of gender inequality in labor and personal growth, particularly with respect to their place in domestic decision- making. Therefore, lack of basic capital becomes one of the basic issues for women where it becomes difficult to be self-sufficient and more independent in their lives, thus affecting their quality of life (Ministry of Women and Children Affairs (MOWCA), 2008).

In numerous underdeveloped countries the majority of women do not have the means to contribute and they require cheap advance to gain respectable employment. To meet these

necessities various approaches have been made as distinctive means, e.g. individual projects were set up and credit surety plans were presented but they contributed nothing to the monetary improvement of women. By and large, microcredit tries to fill this gap by creating various means for the women which, in turn, affect their quality of life (Mehmood, 2002).

Furthermore, it is also seen that governments intervene through tasks, planning and provision of capital to the people in order to control poverty, yet women participants are few in the government intervention in Pakistan. The general population included in these government undertakings is mostly males, while females are mostly disregarded at both the formal and casual levels. Undoubtedly, the prosperity of a country depends on both the males and the females. Despite the fact that many studies indicate that women are more vulnerable to economic hardships, yet the governments and many world institutions ignore such traits.

According to Ali and Haq (2006) approximately 70 percent of the poor people globally are women and they are living with a low quality of life. Accessibility to financial instruments and funding for new ventures especially for women are arduous and complicated tasks. However, in developed countries, women are getting more independence compared to underdeveloped countries even though the availability of resources is increasing in most of the developing countries, where various financing options are now being made available for women. Thus, one of such incentives is the introduction of microcredit to the niche market of women borrowers.

Usually in low income societies like those in Pakistan, women are generally neglected or with no worthwhile capital related to the management system. Even though the main

purpose of microcredit is to provide credit to the small scale borrowers in order to solve the problem of poverty, the poor borrowers, especially women, are not able to access the loans provided by the financial institutions due to some reasons that could not be explained. Since women are more dependent, to cater to their basic needs is difficult since they are not financially independent, thereby affecting their quality of life negatively (Ayertey, 2008; Rehman, 2007).

In addition, the absence of and the difficulties in accessing credit hindered their economic activities which further enhanced the miserable condition they were in and increased the poverty level of the society (Morduch & Haley, 2002). Several programs developed to deal with this situation such as the United Nations Development Program (UNDP) and the International Financial Institutions (IFIs), especially the World Bank, have taken considerable efforts to add microfinance as incentives to alleviate poverty (World Bank, 2013). Therefore, microcredit is considered as a key element that will play a vital role in eradicating poverty among the people, especially women globally (Khan & Rehman, 2007; Osmani, 2007; Pitt, Khandker, & Cartwright, 2006; Khandker, 1998).

Indeed, microcredit is said to address poverty globally where there is a need for the involvement of women in micro businesses and other income generating activities. Their involvement is said to facilitate the earnings and income that lead to better quality of life as argued by many scholars. This better quality of life provides more satisfaction to their lives and makes them healthier, hence, the more their income. Good quality of life is the goal of all individuals and nations. Therefore, access to financing contributes towards women's economic activities which give rise to women's liberation and enhanced quality of life (Kumar, 2015).

In going through current literature, it is evident that some researchers have focused their investigation on the quality of life of women in developing countries. It is conceptually clear that microcredit plays an important role in improving women's quality of life in developing countries. But still, there is a gap in improving the quality of life of the women borrowers of Pakistan. Though they get credit their quality of life is still stagnant and there is no improvement. This gap is fulfilled by introducing an important new variable in the lives of women personal empowerment. Although there is existing literature on the relationship of microcredit and the quality of life of women, the conditions remain the same. The reason is that unless women are personally empowered, microcredit alone has no worth.

So, introducing an important aspect in addressing the low quality of life is personal empowerment. This is an addition to the microcredit. As argued by many scholars, personal empowerment improves the quality of life. This is because personal empowerment increases economic decision-making, political socio-cultural awareness as well as freedom of movement of the women borrowers (Golla, Malhotra, Nanda & Mehra, 2011). According to Khan and Rehman (2007) personal empowerment raises the quality of life of the community especially the vulnerable ones (women). Therefore, personal empowerment is expected to improve women's quality of life as asserted by Khan and Rehman (2007). This is also supported by many researchers such as Kousar (2010); Subramaniam, Maniam and Ali (2013) and Bhatia and Mehandiratta (2014).

Therefore, personal empowerment in women improves not only their income but also the quality of their life (Kousar, 2010). This is because the women will have the power to make independent economic decisions, have freedom of movement whereby without the freedom they cannot be involved in any business, hence the lower their income and lower the quality

of life. Personal empowerment will give more confidence to borrowers in their respective businesses, especially the women borrowers. Additionally Nabahat (2014) argued that paying attention to the personal empowerment of women borrowers will boost their morale and confidence in doing their economic activities, hence the higher the quality of life of the women borrowers.

The importance of the quality of life and personal empowerment is very important in developing countries due to the fact that most of the borrowers in developing countries like Pakistan, have low quality of life which is associated with low personal empowerment. In addition, personal empowerment which includes political socio-cultural awareness is expected to improve the quality of life of the borrowers; this is argued by Bhatia and Mehandiratta (2014). In Pakistan today, many micro women borrowers are facing a rigid political socio-cultural environment because they have low economic decisions and restricted freedom of movement (Khan, 2010).

In a related development, many researchers such as Haq (2000); Wakoko (2003); Nessa (2008); Azid, Ejaz, and Alaamsi (2010) and Nabahat (2014) argued that the demography which includes age, education, family size, marital status and personal annual income could improve the quality of life of women borrowers. Wakoko (2003) argued that age (AGE) impacted positively on the quality of life of women borrowers. Haq (2000) debated that education (EDU) improved the quality of life of women borrowers. Nabahat (2014) also argued that the marital status (MS) influences the quality of life of women borrowers. Nabahat (2014) posited that family size (FS) has an impact on the quality of life of women borrowers. Finally, Azid, Ejaz, & Alaamsi, (2010) argued that personal annual income (PAI) is expected to positively influence the quality of life of women borrowers.

As a result, based on these arguments raised, this study argued that microcredit (MC), personal empowerment (PE) and the demography of women borrowers have relationships with the quality of life. This study therefore, argued that the more the credit facility to women borrowers the more the quality of life. Finally, the demography of the women borrowers will have an impact on the quality of life. Considering the facts of the investigation on the quality of life issues relating to Pakistan, by and large, the present study focused on the impact of microcredit and personal empowerment on the quality of life. Therefore, microfinance and personal empowerment play great roles in the lives of millions of poor people, particularly women.

## **1.2 Problem Statement**

The quality of life is considered to be an important source for the growth and development of an underdeveloped country like Pakistan. Economic policy -makers of Pakistan duly recognized the need to improve the quality of life in the country in order to meet their goals. Pakistan has major socio-economic problems associated with a lack of income generating activities, so the deficiency of personal empowerment in the country needs to be empirically investigated.

Over the years, the quality of life of women has been affected by many factors, for instance, microcredit, personal empowerment and demography. They are the major attributes of the economic development and progress of many countries. Nevertheless, there has been no consistent usage of the above said factors to improve the quality of life (Cheung, Mok, & Cheung, 2005; Ali, Ali, & Subhan, 2015). By and large the country's experience related to quality of life is rather disappointing. As has been discussed in the background of the study and further illustrated in Figure 1.1, quality of life has witnessed a declining trend during the last ten years (Pakistan Statistical Bureau, 2017). The reason behind this decline needs

to be thoroughly studied and examined to identify the most influencing factors and the missing links. Consequently, the policy-makers of Pakistan not only need to pursue policies to improve the quality of life in appropriate lines, but they should also create an encouraging environment for women.

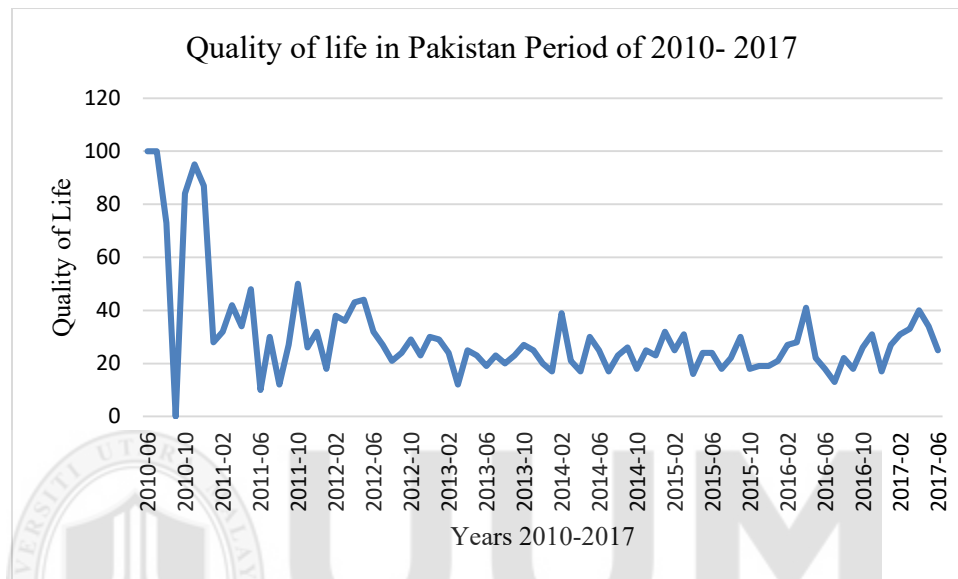


Figure 1.1.  
*Quality of life in Pakistan during the period of 2010- 2017.*  
 Source: Pakistan Statistical Bureau, 2017.

In order to explain this situation, many researchers, for example Mumtaz (2007); Sathar and Kazi (1997); Aurat Foundation (2012); Naz and Ahmad (2012) as well as international reports such as the World Bank (2015) and the Human Development Index Report (2015) proved the adverse effect of poverty on the quality of life in Pakistan. However, the low level of the quality of life and the weak contribution to overall growth of the economy of Pakistan can be mainly attributed to many reasons such as:

1. Poor accessibility of loans to women in Pakistan's context in the Asian region.
2. Neglecting the significant role of women in economic growth.
3. Lack of political socio-cultural awareness in women.
4. Insufficient development of personal empowerment among women.



From the theoretical point of view, this fact is also noteworthy that the link between the quality of life, income and personal empowerment are inseparable. Many scholars agreed that quality of life is attained by an increase in income, personal empowerment and good background of one's demography. According to the World Bank (2015) the quality of life of borrowers depended on their income which depended on their accessibility to obtain loans in the form of credit. In addition, the more the borrowers were personally empowered the better their quality of life (Renzaho, Kamara, & Kamanga, 2016).

Reviewing past literature regarding the relationship between microcredit and quality of life, many researches argued that microcredit influences the quality of life. For example, Maheswaranathan and Kenned (2010); Morduch (2000); Arun *et al.*, (2009); Ali, Ali & Subhan (2015) and Greco *et al.*, (2015) argued that the more the availability of microcredit for borrowers (in this case, women borrowers) the better the quality of life of the borrowers. On the other hand, Moyle, Dollard, & Biswas (2006), Golla *et al.*, (2011); Asher and Khattak (2014); Bhatia and Mehendiratta (2014) and Subramaniam, Maniam and Ali (2013) argued on the personal empowerment of women borrowers. While other scholars emphasized the importance of demographic variables researchers such as Wakoko (2003); Haq (2000); Nabahat (2014); Azid, Ejaz, & Alamas (2010) argued that demography which includes age (AGE), education (EDU), family size (FS), marital status (MS) and personal annual income (PAI) improve the quality of life of women borrowers.

On this account the present study tackled the issues of the quality of life properly for academic interest as well as to understand and appreciate the policy-makers regarding the major determinants of the quality of life. Therefore, this study found it necessary to research on microcredit, personal empowerment, demography and quality of life. This is an addition to the fact that there are limited studies in this area, especially in Pakistan where

the majority of women are poor and have difficulties in assessing credit facilities and are more dependent economically compared to other developed nations.

In conclusion, this study found that factors like microcredit and personal empowerment may execute pivotal roles in women's better quality of life. In this respect, Pakistan Khushali Bank, Tameer Microfinance Bank and the National Rural Support Program Bank (NRSP-B) have taken the initiative of extending microcredit to women as a priority. Loans are aimed at the economic independence of women so that they may have a stable financial status in society. Microcredit can aid economic development by improving egalitarian development, thereby tackling the socio-cultural adversity caused by the lack of women participation.

Nowadays the effect of women's personal empowerment on the quality of life is the most debatable issue in developmental studies. The government of Pakistan is not successful in implementing such policies, which may help women revive and sustain their status in the society. Though many political governments undertook efforts to raise the status of both the urban and the rural women, it was all in vain (Chaudhry, Nosheen, & Lodhi, 2012). That is why there is a need to conduct a research on personal empowerment and women borrowers' quality of life in Punjab, Pakistan.

Microcredit and personal empowerment play key roles for women in every sphere of life. On this count, the present study intended to resolve the issues for academic interest as well as to understand and appreciate policy-makers regarding the major determinants of the quality of life in association with examining the effect of microcredit and personal empowerment of women borrowers in Pakistan. This study eventually aimed to examine

the effect of microcredit and personal empowerment in enhancing the capability of women borrowers in the country to increase the quality of life.

In the above problem statement some gaps have been identified. In the theoretical perspective, the theory of quality of life III has been extensively used in the medical sciences; nevertheless a few studies in social sciences used this theory. Methodologically, previous studies focused on the weak measurement of the variables, in the appropriate estimation technique of OLS and the misspecification of the model. Some studies concentrated on a single independent variable to address the problem at hand. However, in the practical perspective, previous studies did not address the problem of the low quality of life among women borrowers in Pakistan, specifically Bahawalpur, Punjab.

### **1.3 Research Questions**

To address the problem raised in the problem statement, this study formed the following questions and objectives:

1. Is there any relationship between microcredit, aggregate personal empowerment and women borrowers' quality of life?
2. Is there any relationship between microcredit, dimensions of personal empowerment and women borrowers' quality of life?
3. What is the level of microcredit, aggregate personal empowerment and dimensions of quality of life of women borrowers?
4. Is there any relationship between microcredit, dimensions of personal empowerment and dimensions of quality of life of women borrowers?

#### **1.4 Research Objectives**

1. To examine the relationship between microcredit, aggregate personal empowerment and women borrowers' quality of life.
2. To explore the relationship between microcredit, dimensions of personal empowerment and women borrowers' quality of life.
3. To assess the level of microcredit, aggregate personal empowerment and dimensions of quality of life of women borrowers.
4. To explore the relationship between microcredit, dimensions of personal empowerment and dimensions of quality of life of women borrowers.

#### **1.5 Significance of the Study**

The present research will contribute significantly to women borrowers' quality of life which may depend on microcredit and personal empowerment in developing countries such as Pakistan. It will be helpful and contribute to the data bank of literature as there are only a few studies in this area, thus making it suitable for researchers to use this study for further research, thereby improving the relationship between the variables. Furthermore, the present study covers more factors compared to other studies making it more relevant to the academia and policy makers since it has a stronger model. In addition, this study can also be considered as one of the pioneers in the area of women's personal empowerment as well as their quality of life where the study attempted to expand the literature by exploring the impact of microcredit and personal empowerment on women borrower's quality of life.

This study has many social and practical implications for economic research in this domain (women borrower's quality of life). The study highlights the quality of life theory III as the major theory that supports the relationship between independent variables and the dependent variable which could have an impact on the Pakistani community. The said

factors contribute to the changes in the quality of life of women borrowers as they are supported with theories. In addition, the factors are identified as microcredit and personal empowerment of women borrower's on quality of life which has not been given due consideration at the policy level in Pakistan.

With regards to the practical issues, this study will serve as a road map for the non-governmental organizations such United Nations Development Program (UNDP), World Bank (WB) and World Health Organization (WHO) as the study will give them insights to the areas to be addressed, provided they are concerned with tackling women empowerment skills, their quality of life and the eradication of poverty among the women. The government of Pakistan can also benefit from the study to reformulate the policy in line with the findings of the study to improve the lives of its citizens, especially women borrowers, through the State Bank of Pakistan. Other private sectors such as the banks selected by this study namely, Khushhali Bank Limited (KBL), Tameer Microfinance Bank Limited (TMBL) and NRSP-Bank (NRSP- B) will benefit from the study since one of their objectives is to provide micro credits to women borrowers so as to reduce poverty among the women and subsequently increase the capital as well the profit of the banks.

### **1.6 Microfinance Banks (MFBs) and Women Borrowers of Pakistan**

Microfinance Bank is a commercial bank licensed and prudentially regulated by the State Bank of Pakistan (SBP) to exclusively service the microfinance market. The first microfinance bank, named Khushhali Bank Limited (KBL), was set up in 2000 under a presidential declaration. From that point onwards, 10 microfinance banks (MFBs) have been authorized under the Microfinance Institutions Ordinance 2001, in the country. Microfinance banks (MFBs) are officially authorized to receive intermediary payments from the public. According to the Pakistan Microfinance Network (PMN), the national

association of microfinance institutions and banks have 3.6 million micro-borrowers, whereas 1.42 million micro-borrowers are from the microfinance banks (MFBs) (Micro Watch, 2016). Here is an assessment of the microfinance banks (MFBs) regarding micro-borrowers, the number of women borrowers and loan disbursement to all micro-borrowers.

Table 1.2

*Microfinance Banks of Pakistan Performance Indicators of Industry, (2016)*

Micro finance banks	Active borrowers	Active women borrowers	Proportion of active women borrowers	Average loan balance per active borrower (PKR)	Gross loan portfolio (PKR 000)	Annual per capita income (PKR)	Average loan outstanding /per capita (PKR)
KBL	520,743	130,941	25.1%	33,542	17,466,883	153,060	21.9%
TMFB	287,285	99,724	34.7%	42,418	12,186,090	153,060	27.7%
NRSP-B	258,444	27,749	10.7%	35,155	9,085,508	153,060	23.0%
FMFB	177,228	61,991	35.0%	31,822	5,639,743	153,060	20.8%
FINCA	75,804	4,326	4.8%	61,181	153,068	153,060	40.0%
POMFB	16,334	7,940	24.5%	22,593	369,038	153,060	14.8%
AMFB	21,614	3,545	16.4%	122,810	2,654,416	153,060	80.2%
WASEELA	27,218	3,244	11.9%	49,611	1,350,315	153,060	32.4%
U-Bank	22,254	3,272	14.7%	41,313	919,381	153,060	27.0%
ADVANS	2,972	666	22.4%	67,883	201,748	153,060	44.4%

Source: Pakistan Microfinance Network (PMN) (2016).

Table 1.2 depicts the picture of the performance indicators of the microfinance banks of Pakistan in 2016. The highest number of active women borrowers are in Khushali Bank Limited (KBL), while the lowest number is in ADVANS Bank.

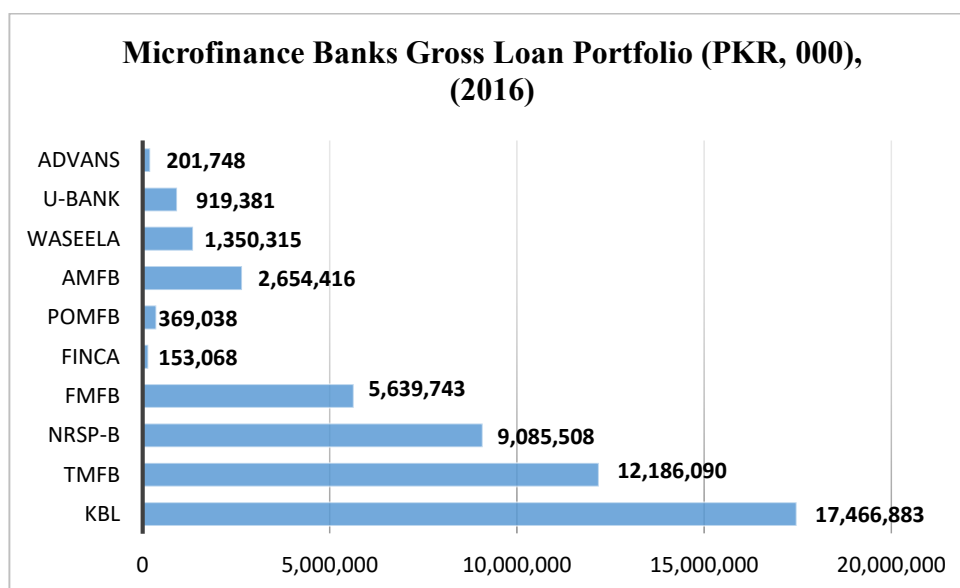


Figure 1.2 (a).

*Gross loan portfolio positions of microfinance banks of Pakistan.*

Source: "Survey, 2016 computed using EXCEL Version 2010."

Figure 1.2 (a) shows the Gross Loan Portfolio (GLP) of Khushahli Bank Limited (KBL) as 17,466,883, Tameer Microfinance Bank (TMBL) as 12,186,090 and the National Rural Support Program (NRSP-B) as 9,085,508 in 2016. Although the rest of the banks were still making their start, they were making efforts to reach their Gross Loan Portfolio (GLP) in millions (PMN, 2016).

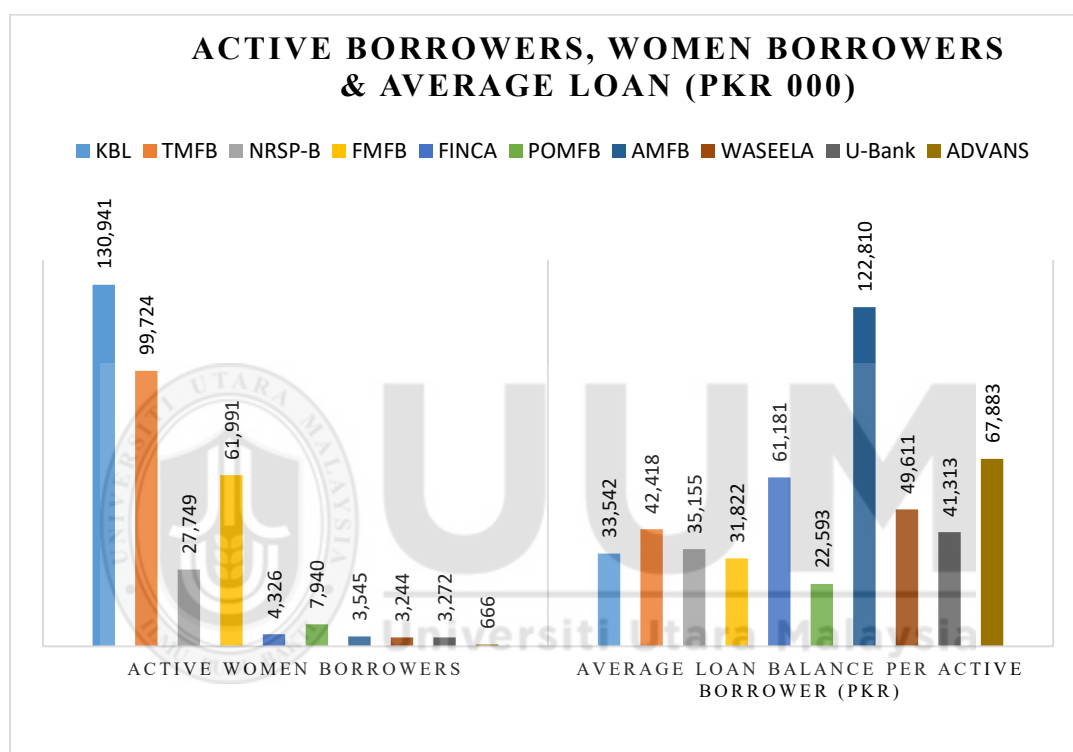


Figure 1.2 (b).  
*Active women borrowers & average loan balance per active borrower (PKR, 000) of microfinance banks of Pakistan.*  
 Source: “Survey, 2016 computed using EXCEL Version 2010.”

The profundity of effort in microcredit operations is measured by an intermediary pointer of average loan balance per borrower to the extent of per capita Gross National Income (GNI). A worth below 20 percent is expected to imply that the Microfinance Providers (MFPs) is neediness centered. Aside from Khushahli Bank Limited (KBL) and the National Rural Support Program Bank (NRSP-B) the greater parts of the alternate microfinance banks (MFBs) fall over this benchmark. The proportion of average loan balance to per

capita Gross National Income (GNI) for microfinance banks (MFBs) has been on the ascent for as far back as four years. Microfinance banks (MFBs) tend to focus on the upper end of the business sector through moderately bigger loan sizes, and subsequently, have a proportion of 20 percent. The proportion of average loan balance to per capita Gross National Income saw an unassuming increment for microfinance banks (MFBs) by 2 percent in 2015. Related to Pakistan's inflationary surroundings, the sector continued to focus on the poor for the implementation of appropriate loan size. The reduction in the estimation of loan, i.e. worth Pakistani Rupees (PKR) 30,000 in one year would be fundamentally lesser in worth the next year.

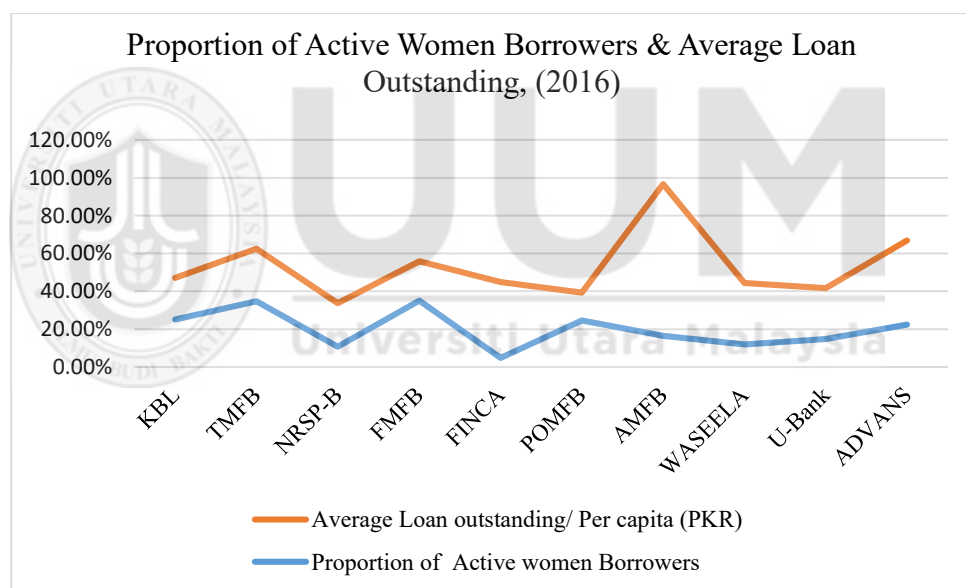


Figure 1.3 (c).  
*Proportion of active women borrowers and average loan outstanding/per capita (PKR).*  
 Source: "Survey, 2016 computed using EXCEL Version 2010."

Figure 1.3(c) illustrates that the extent of female borrowers show a slight decrease in the present year, diminishing from 25 percent in 2014 to 24.1 percent in 2015 (PMN, 2016). Driving microfinance institutions in Pakistan highlight the portfolio position of the microfinance organization of Pakistan. Microfinance institutions are attempting to facilitate the females to take part in the professional exercises. How much of this goal has



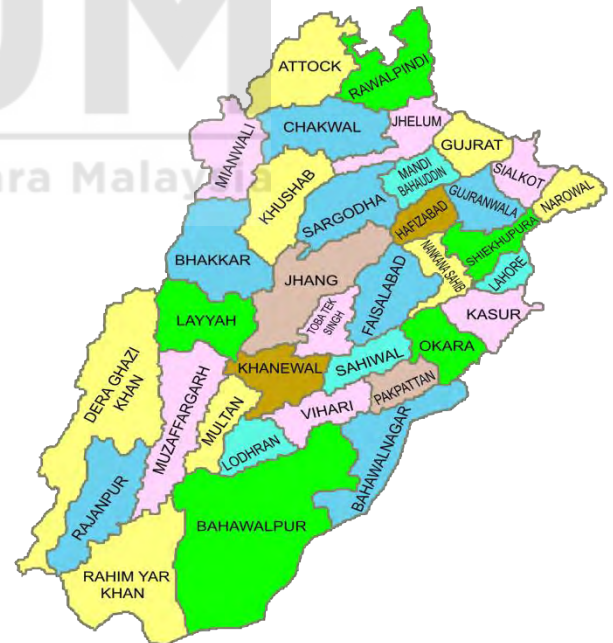
been accomplished is still a question with reference to microfinance suppliers in Pakistan. Aside from this, there are obstacles in transit for females regarding the entrance into microfinance services.

### 1.7 Scope and Limitation of study

Pakistan, an Islamic republic, is geographically divided into four states (provinces). These are Punjab, Sindh, Balochistan and Khyber Pakhtun Khuwa. This study concentrated on the states of Pakistan and particularly focused on Bahawalpur city of Punjab. Punjab is the biggest state (province) on the basis of population. More information about Punjab is given below.

#### 1.7.1 Punjab

Punjab is the most developed and populous province of Pakistan with approximately 56 percent of the country's total population, in which 48 percent are females while 52 percent are males. It is the second largest province in terms of land area after Baluchistan. Punjab has the largest economy in Pakistan, contributing most to the national GDP. The province's economy has quadrupled since 1972. Its share of Pakistan's GDP is 60 percent (World Bank, 2016).



### 1.7.2 Southern Punjab

Punjab is split into two parts: one is stronger and the governing part, the other is weaker and deprived. The stronger one is in northern Punjab and the deprived one is southern Punjab. Southern Punjab has three divisions: Multan, Dera Gazi Khan and Bahawalpur. 47 percent of the total population of Southern Punjab are women (Pakistan Statistical Bureau, 2017).



### 1.7.3 Bahawalpur

Bahawalpur is located in the province of Punjab and it is the biggest city in terms of land area constituting approximately 24,830 km<sup>2</sup> of the total land mass of the Punjab Province and it is the 12th largest district and city of Pakistan (Ayub, 2013). According to the Pakistan Statistical Bureau (2017) 1154316 or 47 percent of the total population of Bahawalpur district are females. More information which reflects the true picture of the quality of life of Bahawalpur is discussed in the Table below.



Table 1.3  
*Bahawalpur District at a Glance*

Area	24830sq.kms
Population	2433091 persons
Male	1278775 (52.56%)
Female	1154316 (47.44 %)
Sex ratio (males per 100 females)	110.8
Population density	98.0nper sq.km
Urban population	665304 (27.34 %)
Rural population	1767787 (72.66 %)
Average household size	6.9
Literacy ratio (10 +)	35.0%

Male	44.86 %
Female	23.95 %
Average annual growth rate	3.08 %
Total housing units	354356
Pacca (cemented) housing units	46.47 %
Housing units having electricity	49.94 %
Housing units having piped water	16.04 %
Housing units having gas for cooking	11.24 %

Source: Pakistan Statistical Bureau, 2017.

Bahawalpur district is one of the least developed regions in southern Punjab, where the annual growth rate is 3.08 percent. The basic infrastructure is insufficient in rural areas where 72 percent of the rural population reside. Bahawalpur is a highly deprived district in Punjab. The woman community in this region is also deprived in every sector of life; the literacy ratio of the women of Bahawalpur is 23.95 percent compared to the men 44.86. Moreover, in Bahawalpur City there are 354356 housing units of which 46.47 percent are cemented (Pacca), 49.94 percent have electricity, 16.04 percent have piped water and only 11.24 percent have gas for cooking, reflecting the low quality of life in Bahawalpur district (Pakistan Statistical Bureau, 2017). Therefore, in most areas of the city, where microfinance loan is disbursed, a dearth of women's personal empowerment at the domestic level exists in both the rural and the urban areas of the city. Hence, there is a great need to put emphasis on microfinance as well as women's personal empowerment to improve the quality of life of women in Bahawalpur, Punjab.

Thus, the sample was collected from women borrowers aged 18 to 65 years. All the women were involved with microfinance institutions. All married, unmarried, widows, divorced and separated were included in the study, although unmarried women formed only 5 percent of the sample. The microfinance institutions selected Khushali Bank Limited (KBL), Tameer Microfinance Bank Limited (TMBL) and the National Rural Support Program Bank (NRSP-B).

This study utilized the cross sectional data collected from the women borrowers of Punjab. Two main independent variables were used in this study, under categories such as: microcredit (loan duration, training and loan size) and personal empowerment (economic decision making, freedom of movement and political socio- cultural awareness) with the quality of life of women in Pakistan as the dependent variable. In addition, the statistical tool used in this study was the multinomial logit model to see the relationship between the variables in order to test the hypotheses of. By going through the literature review of microcredit and personal empowerment related to the quality of life, it cannot be denied that there is a glaring research gap in perceiving the overall women's economic situation in the country.

The present study, thus, attempted to fill the gap by providing a fresh and comprehensive study of the quality of life and related issues pertaining to microcredit and personal empowerment in the growth process of Pakistan as a developing country. The present study intended to analyse the quality of life of women borrowers, thus covering the most deprived areas of Punjab, the biggest state of Pakistan. Research pertaining to economic studies usually encounters many limitations for apparent reasons and the present study is no exception to the phenomenon. The present study encountered some specific limitations; at various analytical stages, the study was marred by the paucity of data collected from the various institutions.

There was a specific problem of finding data from different institutions. The study was based on cross-sectional data and it was difficult for the data used for the different variables to maintain homogeneity. The data was collected only from Bahawalpur, a division of Punjab and not from the whole of Pakistan because of financial constraints and time limitation. The current research was conducted in the deprived areas of Bahawalpur, so it

was very difficult to collect the data and information from the illiterate women borrowers in the research area of Punjab. In short, the present study was based on women borrowers of one deprived division of Punjab, rather than all the women borrowers of the country. Above all the study was limited to women, and men were excluded from the study.

### **1.8 Organization of the study**

The thesis is organized in the following manner. Chapter one gives the introduction to the study. Chapter two addresses the historical perspective of microcredit. Chapter three reviews the basic concepts of women borrower's quality of life and the factors affecting quality of life and the effectiveness of microcredit and personal empowerment. Chapter four describes the methodology of the study, and also the impact of microcredit on women borrowers' quality of life is presented and assessed. The empirical model, study approach, measurement of variables, hypotheses of the study, data collection strategies, survey instrument, preliminary test, statistical and econometric analysis are discussed. The outcomes of the analysis will be discussed in Chapter five.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter reviews the related literature and also focuses on the underpinning theory that relates to the conceptual model of the study. Thus, the research framework of this study is designed by supporting the theory of the quality of life theory III. Firstly, this chapter discusses the women's quality of life, which is a dependent variable of the study. In the second section, this chapter demonstrates the prior studies on the independent variables. After that, the underpinning theory is exposed under the relationship of independent and dependent variables. At the end, there are some empirical studies on the relationship between microcredit and women borrower's quality of life as well as personal empowerment and women borrower's quality of life. Eventually, there is a summary of this chapter.

#### 2.2 Concept of Quality of Life

*“The great society is concerned not with how much, but with how good - not with the quantity of goods but with the quality of their lives”.*  
*(Lyndon Johnson, 1964).*

The concept of 'quality of life' was conceived as a distinct option for the more problematic idea of material welfare in the wealthiest society and was viewed the new, multidimensional and a great deal of more mind stunning goal of societal development. Thus, quality of life is influenced by an individual's physical and mental health, the degree of independence, the social relationship with the environment and other factors (Aikman & Rao, 2012; Ruževičius & Akranavičiūtė, 2007).

According to the Business Dictionary (2015) quality of life as a daily living is enhanced by wholesome food and clean air and water, enjoyment of unfettered open spaces and bodies of water, conservation of wildlife and natural resources, security from crime, and protection from radiation and toxic substances. It may also be used as a measure of the energy and power a person is endowed with that enable him or her to enjoy life and prevail over life's challenges irrespective of the handicaps he or she may have.

Scholars such as Albouy, Godefroy and Lollivier (2010) explained that the concept of "quality of life" is much wider than standard of living or material living conditions, it takes into account working conditions, the degree of social integration, health and education, whether people are particularly fragile economically (e.g. unemployed) or physically, etc. Also, Ruževičius and Akranavičiūtė (2007) stated that the quality of life could be defined as an individual's satisfaction with his or her life dimensions comparing with his or her ideal life. Evaluation of the quality of life depends on one's value system. Hence, to get the standard quality of life there are numerous issues, challenges and problems have to face in this concern which has been sketched under empirical researches.

Hence, by reviewing the above definition and explanation of quality of life, it has been concluded that to have a better life, it is very necessary that one should have a good quality of life. Thus, it can be obtained from physical health, family, education, employment, wealth, religious beliefs, finance and the environment. These factors play a crucial role for the better attainment of quality of life. In the preceding section the relationship between microcredit and quality of life will be discussed.

## 2.4 Microcredit and Quality of Life

Microcredit means small loans for people who need money for self-employment projects that generate income or for urgent family needs such as health problems and educate (World Bank, 2015). It is meant to help improve people's quality of life by lending them a small amount of money for a short period of time. Basically, microcredit activities have affected the lives of clients and others in multiple ways. The most frequently reported types of effects of credit at the individual, enterprise and household level are the following: income, expenditure smoothing, and poverty alleviation; business growth and employment; education and effects in terms of women's facilitation. Thus, the microcredit scheme provides loans at very low interest and systematic guidance to low income women to pursue alternative income-generating activities aimed at improving their economic and social status. Studies on the relationship between individual quality of life and economic issues have been conducted, like employment and wealth. Different people have a different perspective on what they perceive to be the quality of life; some see it as a better living standard, some as a livelihood while some perceive it to be the best status of life.

In addition, Morduch (2000) clarified that the microcredit program is a unique innovation of credit delivery technique to enhance income generating activities. Therefore, the program extends small loans to poor people for self-employment activities, thus allowing the clients to achieve a better quality of life. It is the most sensational antipoverty tool for the poor, especially for women, smoothens consumption and give the poor a hand up to break the vicious cycle of poverty, reduces the vulnerability of the poor and leads to increase in their income (Microcredit Summit, 1997).

Looking at the relationship of quality of life from the macroeconomic base, Veenhoven (1996) measured the quality of life for 48 nations, using the Gross National Product (GNP)



as an economic indicator and as well as other several multidimensional social indexes. The study concluded that for a nation to have success there must be a significant improvement in matters like schooling and social equality. Findings from the aforementioned study showed that the quality of life is systematically higher and significant in North West European nations (about 60 percent) due to affluent, free, equal, the educated and harmonious nature of people, while the lowest being Africa (35 percent) and below the lowest level Asians nations (5 percent) are due to unemployment, state welfare and income inequality. Therefore, these are main root causes of the low quality of life among the nations. Hence the study provided a useful economic and social indicator for measuring the quality of life. In general, the study critically discovered that women, in particular, faced significant hurdles and barriers to achieving sustained increases in income and improving their status. In this manner, it required a complementary support in areas of quality of life and financial services (Maclsaac, 1997).

Another study by Narayan, Chambers, Shah and Petesch (2000) had opined the report of World Bank poverty and development. By using the participatory qualitative method on 60,000 general population of 60 poor's countries. They identified the vulnerable condition of poor women. There are some important factors such as health, nutrition, access to education, employment, and political participation that improve the status of women. But they faced continued discrimination in their whole life. Hence there is a great need for actual benefits programs for the improvement of women's quality of life.

Arun *et al.*, (2009) had described in a book named "Finance for the poor: the way forward" that the large size loan has a sizable impact on group based loan members. Because this amount is repaid regularly in small sums by each member. Which makes it possible for even the poorest borrower to repay his or her loan. Moreover, the further benefit is in such

a way that if the group members make their repayments as they should, they can access to repeat the larger loans and can avail the chance to increase their income that enhances their quality of life.

Consequently, Hulme and Moore (2006) had documented in the report of Global Poverty Research Group (GPRG) that there is strictly a need of microfinance providers, to alter loan portfolio services. These services include bi-weekly meetings, compulsory savings and health insurance schemes, group borrowing, and skill and development training. Additionally, in another study, it was concluded that there is a great requirement for expansion of services to poorer women, provision of larger loan sizes or amounts, flexible payback schedules, the introduction of specialized loans for home owners and altered portfolio design to improve borrower's quality of life (Karnani, 2007).

Similarly, Zaidi, Jamal, Javeed and Zaka (2007) had deeply assessed an economic and social impact of microcredit on women clients of Pakistan, Using a sample of 170 respondents; 90 non-clients and 80 clients, from each selected branch of each of the six sample microfinance providers Orangi Charitable Trust (OCT), Asasah Islamic Microfinance, Sindh Agricultural & Forestry Workers' Coordinating Organization (SAFWCO), Kashf Foundation and National Rural Support Program (NRSP), applied mixed methods approach and difference-in-difference approach. The highest and positive impact found among credit lending institutions those who had relatively young age clients connected from the long period of time for larger loan size have improved their quality of life and as well as their children education's, housing, assets, ownerships, business characteristics, health expenditures, child immunization and income differentials of clients also improved as compared to non-clients. Furthermore, there were some shortcomings

observed about longitudinal aspects of social impact such as difficult to observe, leave alone, measure and quantify than economic impact.

While, Bandyopadhyay (2008) has depicted the role of microcredit in improvement of living standard (quality of life) through social capital transformation and gross national happiness (GNH) of nine indicators (living standard, health of the population, education, ecosystem vitality and diversity, cultural vitality and diversity, time use and balance, good governance, community vitality, and emotional well-being) of the poor people of the third world South Asian Association for Regional Cooperation (SAARC) countries India, Pakistan, Bhutan, Bangladesh and Nepal by using the Human development Index (HDI) reflected the traditional gross national happiness (GNH), found that the indicators such as life expectancy at birth rate, infant mortality rate, under-five mortality rate, endless hygienic and health conditions have numerous issues. Hence the prevalence of poverty might be removed through capability development in terms of credit of the poor rural community to improve their living standard.

In other research by Graham (2008) argued in his study of measuring the quality of life in Latin America in general, respondents by using the pooled for 2000 - 2001 years by applying order logit and probit models. It was found the magnificent effects of factors ranging from health, education, and unemployment status to institutional arrangements in terms of inequality and opportunity on the quality of life. However, the policy recommendations from the study tend to be problematic because of differences in the norms and expectations of individuals, also a lack of clarity in the definition of quality of life serve as a short come to the study.

Likewise, Maheswaranathan and Kenned (2010) had opined in their research on a total of 50 out of 1500 women of Bangladesh Rural Advancement Committee (BRAC) beneficiaries' one of the branches working in Eravur Pattu, Batticaloa District, Sri Lanka. They conducted the in-depth interviews of 50 self-administrated open-ended questionnaires. The study revealed that those women who involved in microcredit program they were able to manage their economic hardship of the families and it resulted in improving the quality of life than existed earlier. Such investments of these provided microloans, was believed, would lead to social and gender equality in the country, and would enhance the elimination of poverty among women. Thus, the study disclosed that there is a strong positive relationship exists between micro-credit programs and elimination of economic hardship of women which lead to improve the quality of life.

Additionally, research of (Albouy, Godefroy & Lollivier, 2010) in European Union countries and included Bosnia-Herzegovina, Turkey and Norway, by taking the data of five years about 1,000 people aged 18 or over face to face interview. It was determined the quality of life by three main dimensions which are according to the standard of living, according to age and according to the family composition. These three dimensions were further divided into material living conditions, financial constraints, health, education, working conditions, participation in public life, contact with others, economic insecurity and physical insecurity. For most of these dimensions, their effect on quality of life is fairly intuitive with all these factors and they have the positive effect on quality of life of an individual.

Related findings were seen in the study of Haq and Khalid (2011) on the impact of microcredit in Pakistan, eight assessments have been reviewed in which five institutional levels and three sector level studies. Used both the primary and secondary data by applying

the randomized controlled trials (RCTs) approach, the findings concluded that participation in the microfinance program has significantly enhanced the household income, consumption expenditure on food, health and children's education of the treatment group as compared to control group. Meanwhile, the difference is more significant in indicators of social change, women facilitation capital accumulation. Furthermore, microfinance loan provision enables women users to improve non-economic areas of life-related to the choice of employment, independent investment of loan, self-health, self and child education, and household decision-making (Jabeen, 2012; Chemin, 2008 & Goldberg, 2005).

Furthermore, Lucy, Ghosh and Kujawa (2010) had piloted the study on 100 women who participated in microcredit loan programs run by a Bangladeshi NGO, Nari Uddog Kendra (NUK). The study examined Nari Uddog Kendra (NUK's) microcredit business development program has an impact on training which more helpful for women to support in organizing and managing their small businesses to maintain their living standard both in local communities and society. The study looks at the positive impact on training, but there is further need to put the attention on developing the business operation skills and having business experience, develop self-awareness and self-confidence in the women through the training programs.

One of the studies of Sadaquat and Sheikh (2011) used the data for social development in Pakistan during (1990-2008) of male and females into three specified age categories. The study applied the descriptive and mean methodology found that the majority of women were suffering, due to price discrimination, pushed to separate low-paid and low-status jobs, less income stability and low security of employment due to their dual role at home and workplace. There were some realities such as no education or with some basic education are allowed to work due to intensive poverty and high rate of inflation, existing

socio-cultural norms continues to strengthen discrimination and source of a massive wastage of the human capital (especially women). Hence, these were the problems and causes of women that limited their life.

Similar studies by Hermes and Lensink (2011) impact of microfinance its sustainability and outreach in the long term for the social and economic situation of the poor developing nations. The conclusion of the scholarship depicted that in developing regions microcredit has the negative significant connection with women. The results showed that women users do not get benefit from microfinance credit provision in non-economic areas related to decision-making ability and family life.

An international research of (Al-Mamun & Adaikalam, 2011) to examine the impact of Amnah Ikhtiyar Malaysia's (AIM) microcredit program on the 281- poor client's quality of life index (eleven selected indicators such that the size of the house, number of stories, number of rooms, structural condition, materials used in walls, roof and floor; sources of drinking water, cooking fuel, toilet facilities and sources of light) in rural Malaysia. A cross-sectional design and stratified random sampling method were used for selecting the control and treatment groups. By applying quasi-experimental approach the findings showed that respondent's status is associated with the socio-economic conditions, size and quality of their houses which has a significant effect and promote self-employment among the poor, mostly unemployed women with part-time family obligation, for whom income stabilization is more important than enterprise growth. Moreover, the research strongly supported in the importance and effect of training programs to improve household's abilities to take advantages of income generating opportunities and assets, which were addressed by almost every study measuring the performances of the microcredit program

(Rahman, Rafiq & Momen, 2009; Pitt, Khandker & Cartwright, 2003; Matin & Begum 2003; Otero, 1999; Zaman, 2009; Naved, 1994).

On the contrary, Jafree and Ahmed (2013) examined the improvements in the quality of life of women utilizing microfinance in urban Lahore, Pakistan. Random sampling was used to identify 5 microfinance providers in the region, and at a second stage of the study, quota sampling was used to interview 149 women users from microfinance site offices. By applying multivariate regression analysis results showed that majority women users of microfinance are poor, illiterate, and employed as unskilled labor. But some of the non-economic variables were evidenced that quality of life which was measured with four categories (economic, family, health and decision making) had significantly improved after loan-taking. The study strongly advocated that the microfinance institutes have limited microcredit services in the respect of urgent and compulsory social development features for women borrowers. Furthermore, if these women borrowers did not retake their loan they were in danger of falling further below poverty lines. Thus, the presence of microfinance services in terms of credit is getting critical and has a negative impact on women user business sustainability and autonomy in Pakistan.

Naeem, Kundi and Khan (2014) concluded in their study to evaluate the impact of microfinance on 75 clients of the First Microfinance Bank (FMFB) with 57 observations of the treatment group and 18 observations of the control group. The study used a quasi-experimental design and found a positive and significant relationship between household position and accumulation of household assets i.e. quality of life for the treatment group, while in control groups, no significant increase has been found in the household's assets and quality of life of the clients because the achievements of the microfinance in the province are still immature and more time required to improve the quality of life. In

addition, the study highly suggested that to overcome some limitations such as microcredit institutes should have to give the proper business management training before the approval of microcredit.

However, Sharma (2014) has depicted in his study the scenario of poverty and living standards of the poor in India and Bhutan. Using secondary data from the Human Development Index (HDI), Self Help Group Bank Linkage Model (SBLP) and Agriculture Lending Program of Bangladesh Development Bank Limited (BDBL), the study had examined that the capability development of the rural poor at the micro level, the positive impact showed that microfinance worked as a fighting weapon for achieving happiness at the individual level, it could be one of the best alternatives which not only fulfills in meeting their basic needs but also helps in enhancing their living standards. Moreover, the study has argued for the limited capability development of the rural poor, which is essential that can be provided by the training of the different stakeholders at the micro level.

Moreover, in the research of Rehman, Moazzam and Ansari (2015) on the thirteen women loan drivers of district Lahore, Pakistan, used a qualitative approach and case study method for in-depth analysis of the phenomenon in the context of interest-free organization Akhuwat. Conclusively, they draw the attention that the role of microfinance in uplifting women, socio-economic status in the context of Akhuwat which brings about changes in women's lives such as household condition, family wellbeing and social status. Furthermore, Age, education, marital status and family type are important contributing factors that influence on women's status. It was highly observed that women are more likely to be civilized and spend most of their income on their families. But on the other hand, societal discrimination still prevails that limited the ability of women to fully exercise their potential for the betterment of their family.



Similarly, Ali, Ali and Subahan (2015) examined the effects of microcredit on business development and income level of the poor population of the region, Malakand, division of Pakistan, used quality of life index by applying multiple regression, findings shows that education level, increase in income, and business processes improvement were found to have a positive and significant relationship with the quality of life, while other control variables like age, marital status, expenditures on food and clothing and the number of times received microcredit were found to have a negative relationship with quality of life. Hence there is further need to improve the quality of life of the poor people by providing other non-financial services such as business training, supervision on loan utilization, conducting awareness programs among the people, etc.

In this regard, considering the nature of earnings, Bhuyian *et al.*, (2015) have argued in the study of three villages in Birampur Upazila, under Dinajpur district of Bangladesh. Out of 442 respondents, 88 women beneficiaries were randomly selected. By computed the coefficient of correlation( $r$ ) findings show that the availability of micro-credit from Bangladesh Rural Advancement Committee (BRAC) the majority of the respondents 73.9 percent belonged to medium duration credit availability, while 17 percent were large duration and 9.1 percent were low duration credit availability, whereas it was found that most of the respondents had small to medium income which shows that the existence of favorable attitude among the larger portion of the BRAC women beneficiaries indicates a positive and significant impact of the client's participation in BRAC activities. Furthermore, respondent's Education, family size, family income, Cosmo politeness, availability of BRAC micro-credit and attitude towards BRAC had a positive relationship in the improvement of their lives. On the other hand, age, family size and duration of involvement with BRAC had no relation to the improvement of their lives of the

respondents. It may, therefore, be concluded that it is necessary to focus on motivational work and various training programs may increase favorable attitude towards BRAC.

The dynamic role of microcredit on the quality of life has not been denied, especially in the developing countries regarding women. Several studies (Bhuyian *et al.*, (2015); Ali, Ali & Subahan, 2015; Naeem, Kundi & Khan, 2014; Jafree & Ahmed, 2013; Al-Mamun & Adaikalam, 2012; Hermes & Lensink, 2011 and Maheswaranathan & Kenned, 2010) have focused and proved the strong relation between microcredit and quality of life along by way of other resilient factors.

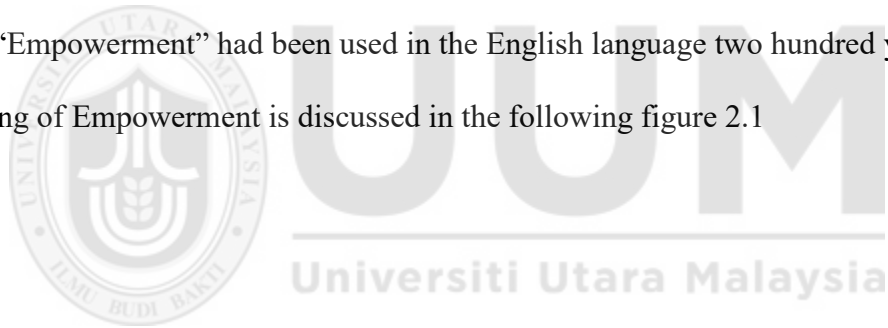
Consequently, there is no universal quality of life determination. The World Health Organization (WHO) (1995) and Human Development Index (HDI) have determined the quality of life in a general term like accommodation, income and employment etc (Ruzevicius & Akranaviciute, 2007). Even though (as cited in Ruzevicius, 2007, 2006a, 2006c, 2005), the quality of life is influenced by many factors and conditions like accommodation, employment, income, material welfare, moral attitudes, personal and familial life, social support, stress and crisis, health- related quality of life, health services, working conditions, nourishment, education opportunities, ecological factors and others. However, further studies focused on quality of life and microcredit dimensions such as loan size, loan duration and training (Bhuyian, Mankhin & Rahman, 2015; Hoque & Itohara, 2009; Jaffree & Ahmad, 2013; Al-Mamun *et al.*, 2012 and Setboonsarng & Parpiev, 2008).

This research established the fact that the several microcredit programs that have been introduced at different times, by different managements and authorities might not have yielded the expected results which determine good quality of life probably because

attention has not been paid to the personal empowerment of the poor oppressed women. Therefore, the personal empowerment is paramount to improve quality of life is based on the fact that the women are highly persecuted and oppressed and as long as they experienced psychological and physical frustration, they may almost always struggle in their homes and societies to get the better quality in their lives which move towards their development. As a result, there is a great need to introduce personal empowerment as a new variable for the poor women borrowers, which has a paramount importance in enhancing the improvement in their quality of lives.

## **2.5 Concept of Personal Empowerment**

Before introducing the personal empowerment, let have to look on empowerment. The word “Empowerment” had been used in the English language two hundred years ago. The meaning of Empowerment is discussed in the following figure 2.1



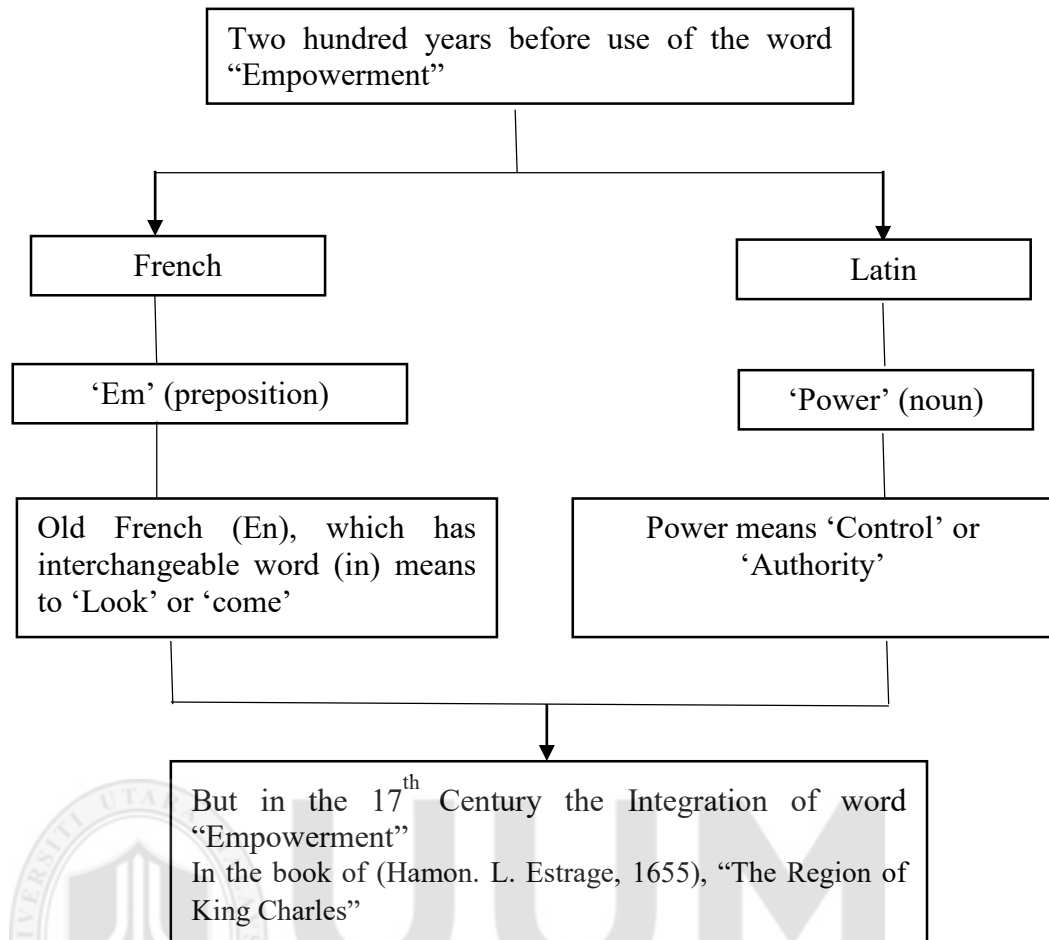


Figure 2.1  
*The Meaning of Empowerment*  
 Source: Lincoln, Travers, Ackers & Wilkinson (2002); the meaning of empowerment.

The term empowerment has different meanings in different socio-cultural and political contexts and does not translate easily into all languages. Around the world, observation and exploration of local terms associated with empowerment. Thus the term empowerment includes “self-strength, control, self-power, self-reliance, own choice, the life of dignity in accordance with one’s values, capable of fighting for one’s rights, independence, own decision making, being free, awakening, and capability” vice versa. The term can be used to characterize relations within households or between people and other factors at the global level.

On the other hand, Scrutton and Luttrell (2007) had argued that ‘Empowerment’ is a term that has been adopted by a various range of institutions, from the World Bank (WB) to many more major NGOs, but few of these share common definitions, while others like United Nations Development Program (UNDP) and Save the Children leave the term undefined. In other words, there is no clear centralized definition of the word. Thus the definitions of empowerment are derived in local value and belief systems. Consequently, empowerment is of intrinsic value; as well as having instrumental value; relevant at the individual and collective level, and can be economic, social, or political.

Henceforth the descriptions of empowerment have focused on the issues of gaining power and control over decisions and resources that determine the quality of one’s life (Oladipo, 2009). Thus, in the light of the history, this research has found the different kinds of empowerment in the below Figure (2.3) and able to further study on the personal empowerment.

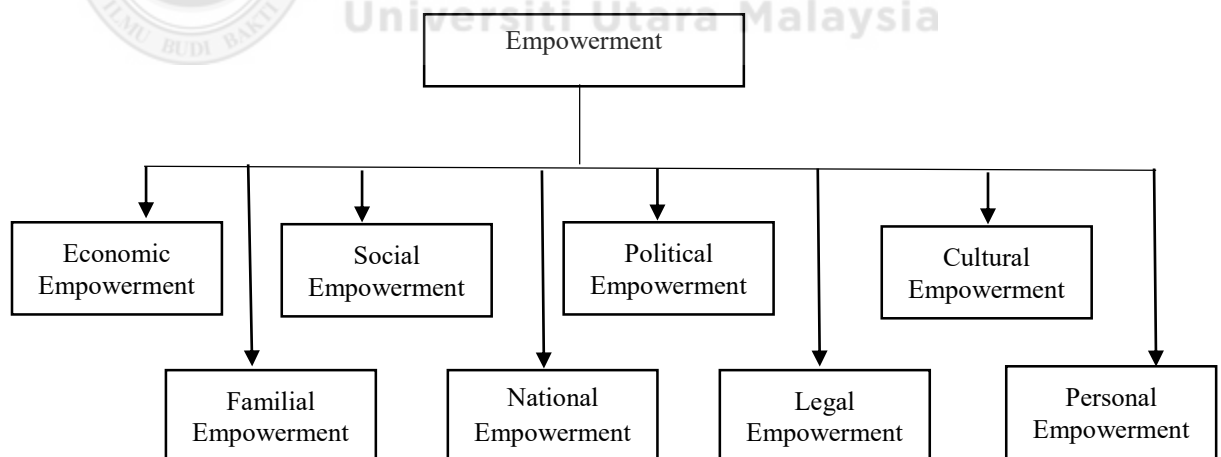


Figure 2.2  
*Kinds of Empowerment*

In the above Figure (2.2) numerous scholars have defined empowerment differently in different, cultural, social and political circumstances. Empowerment can be familial, social,

personal, economic, and political (Nabahat, 2014). Some of the measurements of empowerment are, control over recourses, self-determination, self-strength, freedom of mobility, right to vote, spending according to one’s own will, self-respect, and decision-making ability. Basically, empowerment means growing of the religious, social, political, and economic power of communities and individuals. It entails developing self-belief of the individual in its personal ability (Khan & Rahaman, 2007). There is a need to be mentioned here that empowerment could be in different aspects, ranging from economic, political, social and psychological. Hence the personal empowerment is a kind or key component of empowerment and it mainly focuses on individual’s personal feelings or psychological state of mind.

Furthermore, the specific purpose of the present study is to explore and establish the importance of personal empowerment of the poorer, particularly women borrowers in the development of their quality of life. The current research aimed at establishing the fact that because the woman belongs to South Asian countries is an experience of frustration, aggression there is a change in value orientation which has led to serious psychological and physical disequilibrium which must be attended through personal empowerment in order to enhance the quality of life. Before the detail, review has a look at the history of “*Empowerment to Personal Empowerment*” in Table 2.1.

Table 2.1  
*The history of the concept of “Empowerment to Personal Empowerment”*

History of Empowerment to Personal Empowerment		
Authors	Years	Concept
Moglen, H	(1983)	“Power & Empowerment”, (first time used for women).
Clark, P. G	(1988)	“Autonomy, personal empowerment, and quality of life in long-term care.”
Lord, J and Farlow, D. M	(1990)	“A study of personal empowerment: Implications for health promotion”.
Lord, J	(1991)	“Lives in transition: the process personal empowerment. Disabled person’s participation program. Ottawa: secretary of state”.
Blinde, Taub and Han	(1993)	“Sports participation and women’s personal empowerment: experiences of the College Athlete”.

Boyd, A. S	(1999)	“The relationship between the level of personal empowerment and quality of life among psychosocial clubhouse members and consumer-operated drop-in center participants.”
Edwards, Green and Lyons	(2002)	“Personal empowerment, efficacy, and environmental characteristics”
Cheung, Mok, and Cheung,	(2005)	“Personal empowerment and life satisfaction among self-help group members in Hong Kong”.
Moyle, Dollard and Biswas	(2006)	“Personal and Economic Empowerment in Rural Indian Women A Self-help Group Approach”

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Table 2.1 depicts the review of personal empowerment, in this respect in 1983 empowerment had noticed for the first time for women as a “Power & Empowerment”, while in 1988 the term of “personal empowerment” had been used in medical sciences as one of the main dimensions of personal empowerment with autonomy and quality of life in long-term care. Even though in 1990 and 1991, the term personal empowerment has used in health sciences. Whereas in 1993 the concept of personal empowerment had viewed in health sciences as, “Sport participation and women’s personal empowerment: experiences of the College Athlete”. At the end of 1999 it had been used in medical sciences as “The relationship between the level of personal empowerment and quality of life among psychosocial clubhouse members and consumer-operated drop-in center participants.” Then again in 2002, it had been examined in the field of education as “Personal empowerment, efficacy, and environmental characteristics”. However, in 2005 and 2006 it looked over as “Personal empowerment and life satisfaction among self-help group members in Hong Kong” and “Personal and Economic Empowerment in Rural Indian Women a Self-help Group Approach” respectively. Hence, in social sciences, personal empowerment is new to investigate as the independent variable on quality of life.

### 2.5.1 Personal Empowerment

Personal empowerment can be conceptualized in various ways. In the words of Moyle, Dollard and Biswas (2006) “Personal Empowerment enables women to develop the necessary skills and confidence to access resources to achieve their aspirations”. While the further definition of personal empowerment has derived from the concept views of empowerment which has focused on individual strength and self-esteem to gain control over available resources and to exercise their right to obtain a better quality of life for themselves and their family. Thus Moser (2012) has illustrated personal empowerment as, “the capacity of women to increase their own self-reliance and internal strength. This is identified as the right to determine choices in life and to influence the direction of change, through the ability to gain control over material and non-material resources”

In other words, “personal empowerment can be described as a process involving positive changes to a person’s psychological construct (internal beliefs) such as collective efficacy, self-efficacy, self-esteem and a proactive attitude” (Lord, 1991). However Oladipo (2009) depicted that the “Personal empowerment in psychological perspective and considered as a multi-faceted construct reflecting the different dimensions of being psychologically enabled and is conceived of as a positive integrate of perceptions of personal control, own decision making, being free, a proactive approach to life, and a critical understanding of the socio-political environment, which is rooted firmly in a social action framework that includes community change, capacity building, and collectivity. Thus, lack of ability to achieve the desired goals of good quality of life may be owing to the lack of the personal empowerment of the women borrowers and an attempt at solving this problem has necessitated a discussion of this nature on personal empowerment to get the required outcomes of the women’s development.



### 2.5.2 Reasons to Use Personal Empowerment

There are few key logics to enforce the current study to introduce the personal empowerment for the enhancement of the women borrower's quality of life.

1. There have been different economic (micro financing) and social empowerment programs that have failed to find the required solution perhaps, because the personal (psychological) formation of the women borrowers who are being empowered has not been put into consideration due to rigid socio- political culture and unfavorable norms.
2. Without personal empowerment, wrong attitudes and behaviors may be occurred by the women borrowers which may eventually obstruct in good quality of life, since personal empowerment is a need towards women development.
3. The personal empowerment of all the oppressive women has been ruined through the inadequate circumstances till birth to death. Hence it must be considered as such in the formulation of agendas that are directly or indirectly related to them. Failure to do this may yield a negative result and adverse effect on their quality of life.

Therefore, the focal objective of this study is to clarify whether personal empowerment (self-efficacy, proactive attitude and self-esteem) exist among the individual's women. Thus, by surmising the above debate the present scholarship has determined that personal empowerment is to assist women from work and to provide access to better quality of life. Accordingly, nearby various factors which affect the personal empowerment of an individual (particularly women borrowers), but education and political socio-cultural conditions are two most important aspects regarding which have a significant influence on

poor women of under developing countries. Most studies on education, political socio-cultural restrictions and empowerment mainly absorbed that there is a significant impact on the women's quality of life on microloan taking women.

## **2.6 Personal Empowerment and Quality of Life**

There are many types of research which have been performed for the empowerment of women through different ways specifically finance and credit, but these women have still miserable condition in their quality of life. Personal empowerment is the main component of empowerment. Personal empowerment defined as “changes in personal qualities in such aspects as an outlook on life, personal abilities, emotional control, and knowledge of the larger society, was delineated into intrapersonal empowerment and extra personal empowerment”. Defining personal empowerment as “the capacity of women to increase their own self-reliance and internal strength”. This is identified as the right to determine choices in life and to influence the direction of change, through the ability to gain control over material and non-material resources (Moser, 2012). Hence the thought of personal empowerment has been used in different researches in different perspectives.

According to the study of Clark (1988) on elderly population of Rhode Island, it was concluded that personal empowerment is clearly at the very core elements that defined quality of life. Nevertheless the personal empowerment of the long term care consumer and his or her family represents a goal in itself and means for enhancing the quality of life of the elderly population. Hence findings of the research showed that personal empowerment plays an important and positive role towards enhancing quality of life. Similarly, Lord and Hutchison (1993) finding entail the process of the personal empowerment is a change towards a unique ongoing process of an individual who becomes

increasingly empowered by moving through the stages of awareness, connecting and learning mobilization (taking action), and the contribution which leads to quality of life.

In this manner Boyd (1999) has used the concept of personal empowerment and quality of life in his study among 151 participants of three Psychological clubhouse members and three consumers-operated Drop-in Center participants. The main purpose of the study was to explore the empirical relationship between personal empowerment and quality of life. The findings of the study concluded that there is a positive relationship between personal empowerment and quality of life. So as the personal empowerment increases quality of life also increases.

To the same extent Lincoln *et al.*, (2002) depicted the notion of personal empowerment in the interdisciplinary etymology of empowerment. Generally, empowerment becomes a widely used observational term of the 1990s. However, in practical terms, it shares the doubt of its indications in the human resource management tradition. But for its followers, empowerment is a humanistic device to improve the quality of life for ordinary individuals. Thus, empowerment is also a highly mysterious, theoretical concept. It has no single sage, nor does it define a clear-cut set of policy initiatives. However the idea of personal empowerment comes from the empowerment by saying that it is intended to convey a sense of responsibility at the level of an individual.

Whereas Edwards, Green and Lyons (2002) examined the concept of personal empowerment with efficacy of teachers and relates these constructs to environmental growth. By using the multiple regression for the Vincenz empowerment scale with the school culture survey as well as for satisfaction and age related variables. The research found the significant predictors of personal empowerment were administrated professional

treatment of teachers, teacher decision making, reflective self-awareness, honoring of student voice personal teaching efficiency and satisfaction with teaching as a career. Present strategies for principals to use in helping teachers increases in personal empowerment.

To the same degree Cheung, Mok and Cheung (2005) examined the relationship between personal empowerment and life satisfaction among Self Help Groups (SHGs) members in Hong Kong. By randomly selected 100 (SHGs) out of 211. Out of 719 structured questioned, total sample of 224 males and 350 females had been observed. Ordinary least square (OLS) multiple regression and path model analysis was applied to construct and compared the direct effects and indirect effects of personal empowerment, a sense of mastery, and self-esteem on life satisfaction. In this scholarship, personal empowerment was defined as “changes in personal qualities in such aspects as outlook on life, personal abilities, emotional control, and knowledge of the larger society, was delineated into intrapersonal empowerment, interpersonal empowerment, and extra personal empowerment”. Furthermore, personal empowerment was also viewed as a form of social capital, generated from the individual’s engagement in the social relations of members of the self-help group for the achievement of benefits. Meanwhile, the study established a significant and positive relationship between personal empowerment and life satisfaction which focused as a possible outcome or benefit of personal empowerment.

Moyle, Dollard and Biswas (2006) had presented personal empowerment in such a way that, women’s sense of personal empowerment (e.g. Collective efficacy, self-efficacy, proactive attitude, self-esteem) has the immediate effect of a sense of purpose, an enhanced level of psychological well-being of the rural women (Moore, 2001; Lyons, Smots & Stephens, 2001). Afza and Rashid (2009) findings critically argued that on remote women

entrepreneurs by using the baseline survey from selected cities, across four provinces of Pakistan. The study debated women were not only deprived of financial resources, but also lack access to basic needs such as education, health, clean drinking water and proper sanitation". Further, these women had to face social and gender discrimination, weaker family support, the absence of self-actualization. In addition a little entrepreneurial orientation had fewer obstacles classified as barriers to the growth of remote women entrepreneurs in Pakistan. Hence, this may indicate the low quality of life of women.

This further stressed by Tornqvist and Schmitz (2009) in their study they observed the women farmers, in the publication of the Swedish International Development Cooperation Agency (SIDA) Gender Equality Team with the collaboration of the International Center for Research on Women (ICRW), they focused that women's real personal power over economic decisions, while women's own personal empowerment can be achieved through equal access and to control over critical economic resources and opportunities. The personal and economic empowerment of women contributes to poverty reduction for all, especially for low-income households, it is vital for household survival. In addition, promoting women's personal and economic empowerment facilitates the achievement of other important public policy goals such as economic growth, improved human development and reduced violence. Hence, it may lead to improve quality of life of women.

A study by Khan (2010) on women involved in ladies dressmaking industry, by applying the OLS model on primary data from urban and rural areas of Bahawalpur. The findings indicate that an increase in the role of women in decision-making in household budgeting for their family will lead to increase in household income that would assist them to provide nutritious food, better education for children, clothing, and might also increase their assets

through social groups. Furthermore, those women spent most of their income on their families as compared to their counterparts and trying to get the better quality of life.

A more detailed study was presented by Golla *et al.*, (2011) in the report of the International Center for Research on Women (ICRW), Washington DC, America. The study has found strong reasons to emphasize women's economic empowerment in the development and well-being of the women not only for women but also for families, societies and national economies. Furthermore, economically empowered women have the ability to achieve their rights and well-being while also reducing household poverty, increasing economic growth and productivity, and increasing efficiency. It had been concluded that women invest the extra income in their children, providing a route to sustainable development for the improvement in the lives.

A study performed in Malaysian context by Subramaniam, Maniam and Ali (2013). They selected 400 Malaysian women by using mixed method approach. The results of their multivariate analysis show that empowering women to participate in economic life is necessary in order to improve their quality of life, this was due to a direct impact found on women's quality of life, as personal empowerment of women entails greater freedom and control over important decisions that affect their lives.

Moreover, research of Asher and Khattak (2014) identified some indicators of personal empowerment such as control over recourses, self-determination, self-strength, freedom of mobility, right to vote, spending according to one's own will, self-respect, and decision-making ability which has a positive and increasing impact on income and expenditure, children education and health which upgraded standard of living and quality of life of women. Moreover, some researches have been reviewed in respect of dimensions of

personal empowerment such economic decision making, freedom of movement and political socio cultural awareness.

In this manner Bhatia and Mehandiratta (2014) mentioned in their study of empowering socio-cultural condition of 250 women professionals in district Faridabad, India. The study had argued that there is a strong need to break the unfavorable socio-cultural environment for working women. They forced on positive economic and social policies for the facilitation of women to realize their full potential, their equal access to participation, to health care, quality education at all levels, career and vocational guidance, employment, equal remuneration, occupational health and safety, social security and public office and decision making of women in social, political and economic life of the nation. Furthermore the study had mentioned some limitations for strengthening legal systems aimed at elimination of all forms of discrimination against women, changing societal attitudes and community practices by active participation and involvement of both men and women, mainstreaming a gender perspective in the development process, eliminate of discrimination and all forms of violence against women and the girl child and building and strengthening partnerships with civil society, particularly women's organizations. Hence all these aspects enhance the quality of life of women in the society.

Thus, by giving microcredit might improve the quality of life of women as above mentioned support of previous researches, but perhaps might be strict socio-cultural conditions, the rigid political state of affairs, self-created critical norms have a bitter impact on women borrower's quality of life. Though to unlock the microcredit strategies there is a necessity of a key of personal empowerment that leads to a quick revival of the economy to increase the quality of life of women. Therefore, in the present situation, there is great need to break this unsophisticated socio-cultural condition. Henceforward, there are no

worldwide determinants of personal empowerment. By adapting the light of the reviewing of the previous researches such as (Yasmeen & Karim, 2014; Vaessen, Rivas, Duvendack, Palmer, Leeuw, Van and Waddington, 2014; Nabahat, 2014; Nessa, 2011; Pitt, Kandker & Cartwright, 2006; Cheung, Mok and Cheung, 2005), this current scholarship had adapted the three dimensions of personal empowerment i.e. women economic decision making, women's freedom of movement and women's political socio-cultural awareness.

## **2.7 Underpinning Theory**

The theoretical framework of the present research based on a theory according to its relationship. This research is underpinned by the quality of life theory III (Ventegodt, Merrick & Andersen, 2003). This is derived from Maslow hierarchy (1943) of needs. But the present research theory is based on by Ventegodt *et al.*, (2003) quality of life theory III. This theory best explains the quality of life concepts in relation with microcredit and personal empowerment. Now the basic and most important concepts of quality of life theory III, Maslow Revisited by Ventegodt *et al.*, (2003) is explained below.

### **2.7.1 Quality of life Theory III, Maslow Revisited by Ventegodt *et al.*, (2003)**

The quality of life is defined differently by different people. The quality of life means a good life and we believe that a good life is the same as living a life with a high quality (Ventegodt, Merrick, & Andersen, 2003). Therefore, Ventegodt *et al.*, (2003) have finally presented the quality of life theory III (Maslow Revisited). In 1962, when Abraham Maslow published his book *Towards a Psychology of Being* (Maslow, 1962), (as cited in Ventegodt *et al.*, (2003) that there were hardly many who (Erikson, 1963; Kohlberg, 1969; Murrell, 1973; Kimmel, 1975; Leovinger, 1976; Siegel, Atkisson, & Carson, 1978; Sirgy, Samli, Meadow & Carlet, 1982; Murrell, Brockway, & Schultz, 1982; Bell, Sundel, Aponte, Murrell, & Lin, 1983; Nguyen, Atkisson, & Bottino, 1983; Sirgy, 1984, Sirgy,



Morris & Samli, 1985; Sirgy, 1986) could have guessed that by doing this he had established a theory of quality of life III, which still even after 40 years is considered a consistent theory of quality of life. The key point of the “Quality of life theory III”, which has Maslow based approach illustrated that, “*the development towards the concept of human needs and an existentialistic attitude of self-actualization, based on personal growth*”.

In the present research, the quality of life theory III Ventegodt *et al.*, (2003) has used on the bases of the theory of Maslow hierarchy (1943) of needs. Maslow’s basic concept is that the needs are traditionally related to developing the notion of a progression of satisfaction of the needs that leads to the quality of life in social development. When the five basic needs are fulfilled, then the quality of life is high. These basic needs are such as, Physiological needs (food, health and sleep), Safety needs (shelter, removal from danger), Social needs (love, affection, being a part of groups), Esteem needs (self-esteem and esteem from others) and Need to know and understand. All these needs are representing the utilization of money that is microcredit. Therefore, quality of theory III, Maslow Revisited by Ventegodt *et al.*, (2003) described well the variable of present research that is microcredit.

His perspective was simple that ability to function come when you take the responsibility for fulfilling all your needs. Thus, the hidden potential which is personal empowerment for improving quality of life really lies on aesthetic needs and achieving individual potential that helps the person to acknowledge that his or her lust for life, his or her needs, and his or her wish to contribute, is really deep down in human existence one and the same. But the person will only find this hidden meaning of life if he/she scrutinize his/her own life and existence closely enough, to come to know its innermost self. Thus, a person is

personally empowered when he /she achieve it's all the hierarchy and reaches towards high quality of life. Let's have a look on its assumptions.

### 2.7.2 Assumptions in Hierarchy of Needs Theory

1. The man wants to be, i.e. he wants are growing continuously even when some wants are satisfied.
2. Needs to have a definite hierarchy of importance. As soon as needs on a lower level are fulfilled, those on the next every individual.
3. A satisfied need does not act as a motivator.
4. As one need is satisfied, another replaces it.

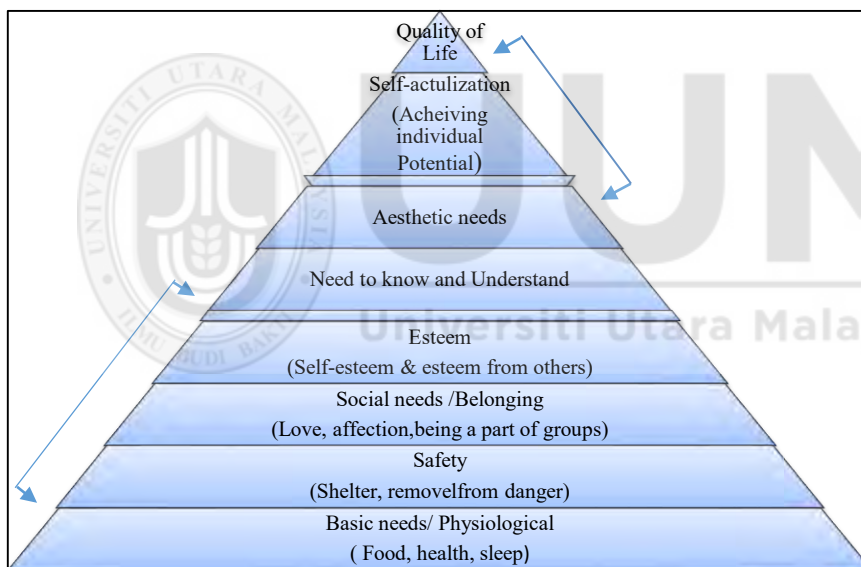


Figure 2.3

*Maslow Hierarchy of Need, "Towards a Psychology of Being and Established a Theory of Quality of Life, (1962) (as cited in Ventegodt et al., (2003)."*

In the above Figure 2.3 the Maslow hierarchy of needs represents societal institutions are designed to serve human developmental needs. There are needs that serve as a microcredit (Income) such as biological needs (e.g., water works, utilities, agriculture); safety needs (e.g., health services, police, emergency facilities, judicial system); social needs (e.g., leisure, recreation facilities, social products and services); and esteem needs (e.g.,

employment services, intra organizational services); all these are considered as an important aspect of life. These needs are fulfilled when a person have income or credit.

Another order of needs are (need to know and understand oneself); (aesthetic needs); know about his or her abilities, these needs play a role in making personal empowered and the last need is actualization needs (*e.g.* Arts, theory,) that will lead towards good quality of life (Maslow's 1962). So, the present research focus on the Maslow hierarchy of needs in this perspective.

### **2.7.3 Conclusion**

In spite of all the possibilities in the greater freedom of modern man it looks like most of the people in our society still do not surpass level two in the hierarchy. Therefore, the time has now come, bearing in mind the increasing economic wealth and personal development leads to good quality of life. But the poverty among the poor population is so inescapable and prevailing that their quality of life is hardly mainly meeting the needs. The poverty is so crushing in the South Asian countries that around one-third to half of the population is suffering from severe poverty (World Bank, 2015). Maslow provides us with a master plan and according to him, there are some important implications. Such as borrowers of microcredit banks generates their income after getting credit, but the role of strong personal empowerment of economic decisions, free to move in the market to compete and getting political-social-cultural awareness to face courageously the world for the good quality of life.

## 2.8 Summary

In summary, this chapter reviewed the literature on microcredit, personal empowerment and quality of life of women borrowers. It highlighted the concept of microcredit, personal empowerment and quality of life, as well as the theory of quality of life III. It also reviewed the previous and present empirical works on the major determinant of quality of life, namely; health, life improvement, economic life improvement, familial life improvement and household life improvement and final summary of the chapter. This was reviewed in order to aid a better understanding of the concepts, and to evaluate the earlier raised research questions. Following this chapter is the details of the research methodology to be employed, which is discussed in Chapter Three.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The focus of this chapter is the research methodology, research design and sample of study utilized in order to accomplish research objectives as enclosed in Chapter One. Essentially, this chapter has detailed according to four main sections which include; the research methodology to explain the philosophical idea underlying the research methods employed; the research design and activities; the conducted research activities and data analysis process.

#### **3.2 Research Design**

The selection of research design has been highly dependent on the availability of existing constructs or variables. If the variables had been widely used in a variety of contexts, specifically in social sciences research, these would confirm on the validity and reliability of measurements as previously tested by other researchers. Weighing the line of reasoning quantitative method has deemed more appropriate for the research. Through the outcomes of factor assessment, cross-sectional survey design was used, equated with quantitative methods in mind. The correlational study has been used to test the theory-driven model through multivariate statistics such as a multinomial logit model. The main reason to choose a quantitative method with the cross-sectional correlational survey design was due to the required degree of generalization of results. This is a descriptive quantitative study that investigates the impact of microcredit and personal empowerment on the women borrower's quality of life. Survey research design is appropriate for the study.

Quantitative research that commonly involves larger respondents would allow a higher degree of generalization of the results. Moreover, in survey research, larger respondents enhanced allowance of model testing through multivariate statistical tools. This was supported by various studies utilizing the multinomial logit model as a statistical tool. Therefore, cross-sectional correlational survey design is most appropriate for this research because the design allowed a researcher to examine the steady, long-term states or conditions and to generalize the results from a sample of a population.

### 3.3 Research Framework

In line with the literature review and the subsequent theoretical gaps identified in the above-mentioned chapter two, research framework of the current research has been created.

In specific terms, the theoretical research framework was designed to illustrate the variables incorporated into this research find their association to identify their effects on women borrower's quality of life in Pakistan. In view of the above discussion, research framework of our study is pictured in figure 3.1.

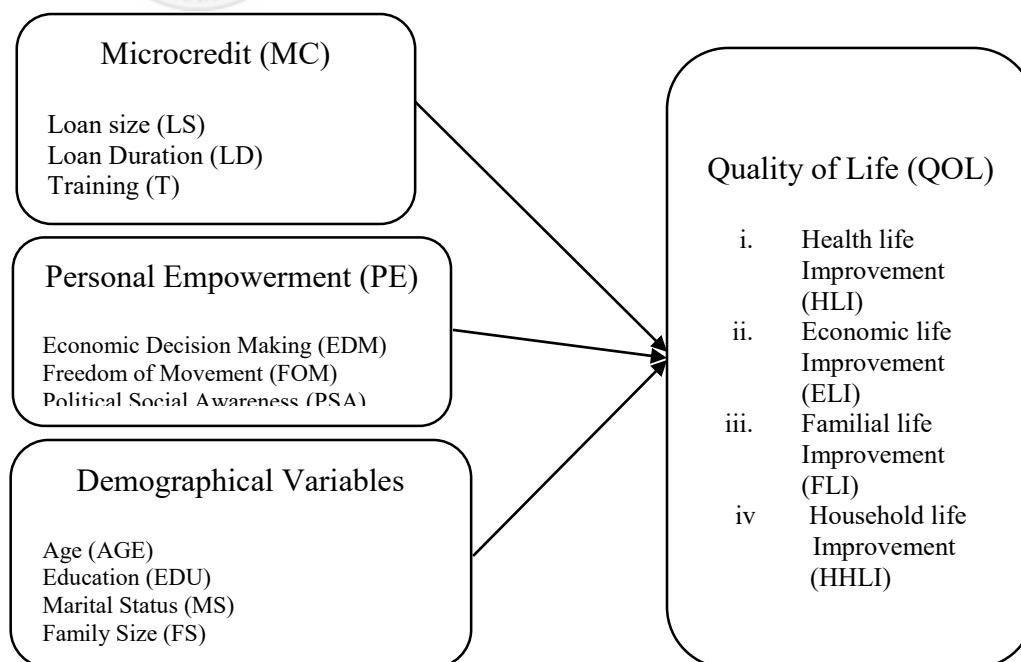


Figure 3.1  
*Research Framework of Women Borrowers' Quality of Life*

The present framework discusses the variables selected in the study. In this study the dependent variable is women borrower's quality of life, whereas microcredit and personal empowerment are independent variables. However, different researchers have investigated the relationship between different variables with women borrower's quality of life. Microcredit is the most important variables in developing women's quality of life. According Sugden (1993) there exist a strong relationship between money income and quality of life. It is concluded that no doubt money income and need are the proxies of welfare and they also contribute to human quality of life. Likewise, women are the sole member of any community. It is very important for every community to give equal opportunities to women. Microfinance is an institution that tries to give equal horizons to women. Income is a crucial factor in underdeveloped countries. When a woman gets income and has the right to spend on their own wish her quality of life improves according to her own needs. On the other hand personal empowerment involves an improvement in various personal qualities essential for more effective decision making and handling of problems, move freely outside and well aware of the political socio-cultural aspects of life. All these factors may effect on the women's quality of life.

Quality of life is defined differently by different people. Quality of life refers to a person's perception to his position in life in the context of his culture and value systems in which he/she lives and in relation to achieve their goals, expectations, standards and concerns (Mir, Wani, & Sankar, 2017). In the present research the quality of life theory III was used. According to this theory "the development towards the concept of human needs and an existentialistic attitude of self-actualization, based on personal growth". Therefore the needs traditionally relate to the quality of life such that, when needs are fulfilled, than quality of life is high. The needs are an expression of our nature, that is, something all human beings have in common (Ventegodt *et al.*, 2003).

After reviewing the earlier studies, this study is able to select the following variables to measure the women borrower's quality of life as dependent variable. On the other hand, by reviewing the previous researches, the current study has explored the subject of personal empowerment (particularly in relation to women borrowers) and improvement in their quality of life. The specific objective of the current scholarship is to explore and establish the importance of personal empowerment of the poor (particularly the women) in order to enhance the quality of life.

Therefore, from the above mentioned discussion, it is clear that microcredit and personal empowerment discussed separately. Now the present research focused on the combine effect of microcredit and personal empowerment on Pakistani women borrowers' quality of life. Hence the given literature supported the present framework. Based on the above discussion hypothesis of the present research was developed.

### **3.4 Hypothesis**

To achieve the objectives of the research, the following hypotheses are formulated:

H<sub>1</sub>: There is a relationship between microcredit, Aggregate Personal Empowerment and aggregate Quality of life.

H<sub>2</sub>: There is a relationship between microcredit, dimensions of Personal Empowerment and aggregate Quality of life.

H<sub>3</sub>: There is a relationship between microcredit, Aggregate Personal Empowerment and Health life Improvement.

H<sub>4</sub>: There is a relationship between microcredit, dimensions of Personal Empowerment and Health life Improvement.



H<sub>5</sub>: There is a relationship between microcredit, Aggregate Personal Empowerment and Economic life Improvement.

H<sub>6</sub>: There is a relationship between microcredit, dimensions of Personal Empowerment and Economic life Improvement.

H<sub>7</sub>: There is a relationship between microcredit, Aggregate Personal Empowerment and Familial life Improvement.

H<sub>8</sub>: There is a relationship between microcredit, dimensions of Personal Empowerment and Familial life Improvement.

H<sub>9</sub>: There is a relationship between microcredit, Aggregate Personal Empowerment and Household life Improvement.

H<sub>10</sub>: There is a relationship between microcredit, dimensions of Personal Empowerment and Household life Improvement.

### **3.5 Operational Definitions of the variables**

Operationally, quality of life of women will measure the improvement in their health, economic and family life. The “health-life improvements” measure respondent perception or ability to purchase medicine, pay for a consultation, and nutritional intake. The “economic-life improvements” measure respondent perception on dealing with business related matters, participation in income generating activities and personal savings. The “family-life improvements” refers ability to give quality time to your family, command respect in the family and ability to cope with work-related stress. The “household life improvement” refers to number of room, toilet facility in house, drinking water, electricity connection and consumer durable goods etc. (Jafree, 2013; Albouy, Godefroy & Lollivier, 2010).

While the micro credit is measured to refer loan size (Yasmeen & Karim, 2014), training (Rahman, Rafiq & Momen, 2009) and loan duration (Ali, Ali & Subhan, 2015). Similarly, aggregate personal empowerment is determined by taking the average of economic decision making, freedom of movement and political socio- cultural awareness.

While women economic decision making consist of control over resources, spending according to their own will how they work to earn income for themselves and for their family, and make decisions concerning financial matters (Khan & Rehman, 2007). While, women's freedom of movement refers to measure freedom of movement ability within a family, going to shop alone, visiting relatives, going outside the home without permission, going outside the village alone, going outside the home alone, going to the bank alone, going to local government offices alone, going outside the city alone and going to the health center alone (Yasmeen & Karim, 2014; Nessa, 2011). In the same way women political socio- cultural awareness is determined by their ability within a political and social level, own decision of casting a vote, public protest, social gathering participations, registered marriages, early marriages, stopping dowry, stopping child labor, girl child education, equal food for girl and boy child and small family.

### **3.6 Measurement of Variables**

To measure the impact of microcredit and personal empowerment on women borrower's the quality of life is measured by using four dimensions such as health life improvement, economic life improvement, familial life improvement and household life improvement. Whereas, microcredit is measured through loan duration, training and loan size, while personal empowerment is measured by women economic decision making, women freedom of movement and women political social awareness. The measurement was

adapted from the questionnaire of Jaffree, 2013; Nessa, 2008; Rehman and Naoroze, 2007; Pitt, Khandker and Cartwright 2006.

### **3.6.1 Measurement of Dependent Variable**

The dependent variable of this research is quality of life of women borrowers of Bahawalpur, Southern Punjab, Pakistan. This research is based on the quality of life of the women borrower's so it is important to assess it in a systematic way.

#### **3.6.1.1 Quality of Life**

Quality of life of women is measured in terms of improvement in their health life, economic life, family life and household life improvement. The "health-life improvements" measure respondent perception or ability to purchase medicine, pay for a consultation, and nutritional intake. The "economic-life improvements" measure respondent perception on dealing with business related matters, participation income generating activities, personal savings. The "family-life improvements" refers to the ability to give quality time to your family, command respect in the family and ability to cope with work-related stress. While "household life improvement" refers to number of room, toilet facility in house, drinking water, electricity connection and consumer durable goods etc. Thus the quality of life is influenced by many factors and conditions like accommodation, employment, income, material welfare, moral attitudes, personal and familial life, social support, stress and crisis, health- related quality of life, health services, working conditions, nourishment, education opportunities, ecological factors and others. The dimensions of quality of life shown below in the Table 3.1.

Table 3.1

*Dimensions of Quality of Life and the Related Indicators*

Dimensions of Quality of Life	Total Items= 17
Health Life Improvement	i. Food items (grocery, fruits and clothing) ii. Intake of food items (milk, meat and fruits) iii. Purchase medicine by recommended doctor iv. Ability to cope with work-related stress
Economic life Improvement	i. Ability to pay utility bills (house rent and transport cost) ii. Dealing with business related matters iii. Participation income generating actives iv. Personal savings
Familial Life Improvement	i. Ability to manage spousal relations ii. Command respect in the family iii. Ability to give quality time to your family iv. Ability to visit friends and relatives
Household Life Improvement	i. Number of rooms      ii. Toilet facility  iii. Availability of drinking water      iv. Home Appliances v. Electricity connection      vi. Vehicle vii. Own consumer durables and house hold assets      viii. Media & Communication resources

In the above table 3.1, the quality of life of women borrowers through the calculation of 17 items of QOL as above, information with regards to the overall state of quality of life of the women borrowers is obtained through a single item measure. Each of the women respondents is asked to assess her overall state of quality of life using categories, ranging "1" for worsen, "2" for same, "3" for improved in reference to their experiences over the past duration. The Cronbach's alpha reliability of the total quality of life scale was calculated which is 0.76. The Cronbach's alpha reliability for the dimensions of quality of life scale is for health life improvement 0.69, for economic life improvement 0.74, familial life improvement 0.70 and 0.68 for household life improvement. Which is considered as a good reliability for the scale to use in the research. The Validity of the total scale quality of life of is reported by using Kaiser-Meyer-Olkin measures of sampling adequacy and Bartlett test of Sphericity. The value of KMO measures of sampling adequacy is 0.64 and

the Bartlett test of sphericity is significant which means the scale is valid and reliable to use in the present research. While the KMO measures of sampling adequacy of its dimension of health life improvement is 0.60, of economic life improvement is 0.61, of familial life improvement is 0.60 and household life improvement is 0.62. While, the Bartlett test of sphericity is significant which means the scale and all its dimensions are valid and reliable to use in the present research.

### **3.6.1.2 Back to Back Translation Procedure**

In the present study Urdu version of this scale was used. Quality of life scale was translated by using back to back translation procedure as defined by Brislin, (1970). The following steps were used in doing back to back translation of the scale.

1. Forward translation
2. Expert panel back translation.
3. Pre-testing
4. Final version

All these four steps had been followed in the translation of the scale in the required language. After the above mentioned procedure had been completed, then the pilot study was carried out.

### **3.6.2 Measurement of Independent Variables**

Different variables are used by different researchers as other independent variables to study the impact of microcredit and personal empowerment on the women borrower's quality of life. Most of the studies include age, education, family size, annual income, marital status, area and loan size as the other independent variables. The question is why different researchers incorporate age, education, family size, annual income, marital status, area and loan size in their studies to check the impact of microcredit and personal empowerment on

the women borrower's quality of life. This study analyses each of these variables below.

Hence the measurements of the independent variables are as under below in the Table 3.2.

Table 3.2  
*Summary of the Independent Variables and Measurements*

Variables	Measurements	Sources	Total Items
Microcredit			15
Loan Duration	1= 1-12 months 2= 12-24months 3= 24-36 months 4= 36-48 months 5= 48 & above months	Hoque and Itohara, (2009) Ali, Ali and Subhan, (2015) Karnani (2007)	
Training	1= 1 day 2= 2 days 3= 3 days 4= 4 days 5= None	Naved, (1994) Zaman, (2009) Pitt, Khandker and Cartwright, (2003) Rahman, Rafiq and Momen, (2009)	
Loan size	1= 5000-10,000 2= 10,000-15,000 3= 15,000-20,000 4= 20,000-25,000 5= 25,000-more	Bandyopadhyay <i>et al.</i> (2011) Banu <i>et al.</i> , (2000) Becchetti (2010) Hashemi <i>et al.</i> (1996) Parveen (2007)	
Personal Empowerment Aggregate Personal Empowerment	1= No ability 2= Sometimes ability 3= Full ability	Nabahat, (2014)	32
Economic Decision Making	1= No ability 2= Sometimes ability 3= Full ability	Vondrová and Valach (2014) Sohail, (2014) Subramaniam, Maaniam & Ali, (2013)	
Freedom of Movement	1= No ability 2= Sometimes ability 3= Full ability	Nessa (2011) Niethammer <i>et al.</i> , (2007) Mumtaz and Salway (2005)	
Political Socio-Cultural Awareness	1= No ability 2= Sometimes ability 3= Full ability	Bhattacharya, (2014) Jafree and Ahmad, (2013) Isran and Isran, (2012)	
Demographic variables			25
Age	1 = 18-25 2 = 26-35 3 = 36-45 4 = 46-55 5 = 56-65	Wakoko, (2003) Khan, (2010) Mostofa <i>et al.</i> , (2008)	

Education	1 = illiterate 2 = primary 3 = secondary 4 = higher secondary 5 = graduate	Haq, (2000) Nabahat, (2014) Khan, (2010)
Family Size	1 = 1-2 members 2 = 3-4 members 3 = 5-6 members 4 = 7-8 members 5 = 9 & above	Nabahat, (2014) Nessa, (2008) Khan, (2010)
Marital Status	1 = Unmarried 2 = Married 3 = Widow 4 = Divorce 5 = Separated	Ali, Ali and Subhan, (2015) Yasmeen and Karim, (2014) Khan, (2010)
Personal Annual Income	1= Less than 49,000 2= (50,000-99,000) 3= (100,000-149,000) 4= (150,000-199,000) 5= (200,000-more)	Azid, Ejaz and Alaamsi, (2010) Khan, (2010) Noreen (2011) Mayoux (2005)

In the above table 3.2, the microdot was measured by the calculation of 15 items whereas, the aggregate personal empowerment of women borrowers was measured through the calculation of 32 items. The aggregate personal empowerment (PEagg) as above information is obtained through a single item measure. Each of the women respondents is asked to assess her aggregate personal empowerment using categories, ranging "1" for no ability, "2" for some time ability and "3" for the full ability in reference to their experiences.

### 3.6.2.1 Loan Duration (LD)

Loan duration (LD) is measured based on the months of loan cycle. Even though the duration of loan use is found as significant factor, this is very logical that women who are using micro-credit for a long period have already established them in using micro-credit successfully in different enterprises. Thus through their experience they are able to earn a lot from investing the micro-credit money and contribute more on household income that eventually improve their quality of life Karnani (2007); Hoque and Itohara, (2009) and Ali,

Ali and Subhan, (2015). The measurement scale of the loan duration is 1 = 1-12 months, 2= 12-24 months, 3= 24-36 months, 4= 36-48 months and 5= 48 & above months.

### 3.6.2.2 Training (T)

Training (T) is measured based on the improvement in abilities of the clients. Moreover the importance and effect of training (T) programs to improve household's abilities to take advantages of income generating opportunities was addressed by almost every study measuring the performances of microcredit program (Naved, 1994; Zaman, 1999; Pitt, Khandker & Cartwright, 2003; Rahman, Rafiq & Momen, 2009). The measurement of the scale is 1= 1 day, 2= 2 days, 3= 3 days, 4 = 4 days and 5= 5 days respectively.

### 3.6.2.3 Loan Size (LS)

Loan size (LS) is measured through the loan amount which was taken by the woman respondent (expressed in rupee, 1USD<sup>a</sup> = 104 PKR<sup>b</sup> = 4 RM<sup>c</sup>) from Khushhali Bank (KBL), Tameer Microfinance Bank Limited (TMBL) and National Rural Support Program Bank (NRSP-B) working in Bahawalpur, Punjab province of Pakistan. Hashemi *et al.*, (1996); Banu *et al.*, (2000); Parveen (2007); Becchetti (2010) and Bandyopadhyay *et al.*, (2011) use the loan size (LS) to control the impact of microcredit on women borrower's quality of life because if a female has a larger loan size (LS) she can start a good business and can earn more. Amount of loan absolutely affects the quality of life of woman when the loan is utilized by the woman. The measurement scale of the loan size (LS) or amount is 1 = 5,000 – 10,000, 2 = 10,000 – 15,000, 3 =15,000 – 20,000, 4 = 20,000 – 25,000 and 5 = 25,000 – more (PKR).

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<sup>a</sup> USD = United States Dollar

<sup>b</sup> PKR = Pakistani Rupee

<sup>c</sup> RM = Malaysian Ringgit



#### **3.6.2.4 Aggregate Personal Empowerment (PEagg)**

Here personal empowerment is taken as aggregate of all dimensions. Basically, aggregate personal empowerment (PEagg) refers to individual self-esteem, self-determination, life of dignity and respect, decision making ability, feeling strong within the household and strength within a woman. If a woman is personally empowered it declares that she is confident and has the ability to take interest in decisions within (house) and outside (business) the family (Nabahat, 2014). Furthermore, she has the ability to move with freedom regarding health and business centers. Additionally, she has the ability of political socio-cultural awareness to reposition in the society. To assess the impact of personal empowerment on women borrowers quality of life in this study, there are three dimensions of the personal empowerment have taken such as women decision making ability (EDM), freedom of movement (FOM) and political socio-cultural awareness (PSA). The respondents are also required to answer keeping in view all above mentioned indicators (overall from item 11 to 42). The measurement of the scale is "1" for No ability, "2" for Some times ability and "3" for Full ability.

#### **3.6.2.5 Economic Decision Making (EDM)**

Economic Decision Making (EDM) measures as a women's decision making ability regarding to spend her and family own income, purchasing ability according to her own wish, provide financial help, ability of spending money on her food, health, children education, livestock, lending and borrowing money, buying gifts, purchase of vehicle and leasing land etc. (Subramaniam, Maaniam & Ali, (2013); Vondrová & Valach, 2014; Sohail, 2014). The respondents are also required to answer the questions (from item No 11 to 25) Thus, the measurement of the scale is "1" for No ability, "2" for Some times ability and "3" for Full ability.

### **3.6.2.6 Freedom of Movement (FOM)**

Freedom of movement (FOM) measure the women's freedom of movement ability within a family, going to shop alone, visiting relatives, going outside the home without permission, going outside the village alone, going outside the home alone, going to movies alone, going to the bank alone, going to local government offices alone, going outside the city alone and going to the health center alone (Mumtaz & Salway, 2005; Niethammer *et al.*, 2007; Nessa, 2011). The respondent is also required to answer the questions (from item no 26 -33). Therefore the measurement of the scale is "1" for No ability, "2" for Some times ability and "3" for Full ability.

### **3.6.2.7 Political Socio-cultural Awareness (PSA)**

Political Socio-cultural Awareness (PSA) refers to measure women's control over the casting the vote according to her own choice, visibility in access to social species, participation in extra- familial groups, social networks, the shift in patriarchal norms (such as son preference) symbolic, literacy, access to educational options and modern transportation (Isran & Isran, 2012; Jafree & Ahmad, 2013; Bhattacharya, 2014). The respondent is also required to answer the questions (from item no 34 -43). Hence the measurement of the scale is "1" for No ability, "2" for Some times ability and "3" for Full ability.

### **3.6.2.8 Age (AGE)**

Age (AGE) plays a vital role in women facilitation. It invokes implication of control and regard. It has been seen that family differences are often resolved by elder family members, who have the experience, knowledge and understanding that comes with old age, as is usually assumed (Wokoko, 2003). This view is also supported by (Khan, 2010) who found that experience of old age makes a woman capable of taking a stand. And with the passage

of time when she becomes mother-in-law, she gets the authority over her daughter-in law. As time passes even a defenseless woman becomes authoritative. The relation and understanding between husband and wife also increases with the passage of time enabling them to tackle different problems together (Mostofa *et al.*, 2008). So the importance of age (AGE) in women facilitation cannot be denied. In this study age (AGE) limit of the women borrowers are 18- 65 years and measurement of the scale is 1 = 18-25, 2 = 26-35, 3 = 36 - 45, 4 = 46- 55 and 5 = 56-65.

### **3.6.2.9 Education (EDU)**

Education (EDU) brings knowledge and responsiveness in a woman. The country cannot be economically, socially, and politically enlightened without educated women (Haq, 2000). Education (EDU) increases her knowledge and confidence in concerning her rights and plays an important role in her decision making ability. Usually, with the increase in education (EDU) economic contribution of women also increases. Educated women can more easily protect their right and status and skillfulness of women had a useful impact on their socio economic circumstances (Nabahat, 2014). This has a positive influence on the family income, which improves their status within the family. It also gives information, understanding, self-assurance and potential for a career (Khan, 2010). The measurement of the scale is 1 = illiterate, 2 = primary, 3 = secondary, 4 = higher secondary, 5 = graduate.

### **3.6.2.10 Family Size (FS)**

This variable is used as one of the indicators to determine the number of members living in a particular household. This variable exposes that a household that bears large number of members extends more rights to women. Another reason is that having more family members' women can get moral support especially from other females in terms of household work, child caring and social visits. So, the purpose of inclusion of this variable

is to find out the effect size of large and small family members on commendation women (Nabahat, 2014; Khan, 2010 & Nessa, 2011). The measurement of the scale is 1 = 1-2 member, 2 = 3-4 members, 3 = 5-6 members, 4 = 7-8 members and 5 = 9 & above.

#### **3.6.2.11 Marital Status (MS)**

Married women because of their affiliation to husbands are considered more powerful than unmarried women. They are likely to make more decisions in their homes than single women. This is because married women share responsibilities with their partner. Single women are less sanctioned in terms of decision making as they have to look upon their elders that include their brothers, fathers, mothers and sometimes their grandparents (Ali, Ali & Subhan, 2015; Yasmien & Karim, 2014; Khan, 2010). The measurement of the scale is 1 = Unmarried, 2 = Married, 3 = Widowed, 4 = Divorced and 5 = Separated.

#### **3.6.2.12 Personal Annual Income (PAI)**

Azid, Ejaz and Alaamsi, (2010); Khan (2010); Noreen (2011) used the annual income to control for the impact of micro finance for the women facilitation. Personal annual income (PAI) is expected to be positively related with the granting the power to women because purchasing power facilitates accreditation. Mayoux, (2005) states that the spiral process of promoting the women includes three paradigms (financial self-sustainability, poverty alleviation and feminist facilitation). In the case of financial self-sustainability paradigm, increasing income create women control over their income that increases wage and employment for women. In the case of poverty alleviation paradigm, income enhance women's decision about consumption, while in feminist facilitation it increases the welfare of women which further enables them to bring about wider changes in gender inequality. The measurement of the scale is 1 = Less than 49,000, 2 = (50,000-99,000), 3 = (100,000-149,000), 4 = (150,000-199,000), 5 = (200,000-more) (PKR).

To measure the reliability of aggregate personal empowerment (PEagg) scale the Cronbach's alpha reliability has been checked. The Cronbach's alpha reliability of aggregate personal empowerment (PEagg) scale was calculated which is 0.93. The Cronbach's alpha reliability for the dimensions of aggregate personal empowerment (PEagg) scale is for economic decision making (EDM) 0.82, for freedom of movement (FOM) 0.78 and 0.86 for political socio-cultural awareness (PSA). Which is considered as a good reliability for the scale to use in the research. The Validity of the aggregate personal empowerment (PEagg) is reported by using Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy and Bartlett test of Sphericity. The value of Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy is 0.64 and the Bartlett test of sphericity is significant which means the scale is valid and reliable to use in the present research. While the Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy of its dimension is for economic decision making (EDM) is 0.67, for freedom of movement (FOM) is 0.65 and political socio-cultural awareness (PSA) is 0.68. While, the Bartlett test of sphericity is significant which means the scale and all its dimensions are valid and reliable to use in the present research.

### **3.7 Pilot Study Procedure**

Pilot study has been done to check the content validity. Quality of life and aggregate personal empowerment (PEagg) scale were translated by using a standardized method of back to back translation. The pre-test was conducted on 40 women borrowers to check the reliability of the instruments. The questionnaires were distributed in Bahawalpur, Southern Punjab, Pakistan. The reliability of the instruments was checked through internal consistency of the Cronbach's Alpha.

### 3.8 Data Collection and Procedure

The study intends to examine the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on Women's borrower's quality of life, therefore, all women participants who had borrowed from selected microcredit institutions represent the population of the study includes female borrowers of age's from 18 to 60 years of southern Punjab district Bahawalpur, Pakistan. Due to the time and financial limitation it was not possible to conduct a complete survey of all the women borrowers who have got assistance from microcredit institutions. Determination of accurate sample is something to think about. If the required accurateness is attained by the reduced sample than greater sample size is a waste of time and resources (Khan, 2010).

#### 3.8.1 Population Size

The cross sectional data for this study has collected using structured questionnaire to check the impact on the women borrower's quality of life. The data collected from the district, namely, District Bahawalpur. The sample size of a population is calculated by using the sample of this research is calculated by using Taro Yamane (Yamane, 1973). According to the data of Bahawalpur, the total women borrowers are 44,537 from all microcredit institutions, in which most targeting women clients of three respective banks, namely Khushali Bank Limited (KBL), Tameer Microfinance Banks Limited (TMBL) and National Rural Support Program Bank (NRSP-B) are 8,231. The calculation formula of Taro Yamane is presented as follows

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where

n = sample size required

N = number of people in the population, e = error.

### 3.8.2 Sampling Techniques and Sample size

This research had approached by using stratified proportionate simple random sampling because the sample size of each stratum is proportionate to the population size of the stratum. Thus a simple random sample is a subset of individuals (a sample) chosen from a larger set (a population). Each individual is chosen randomly and entirely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process, and each subset of  $k$  individual has the same probability of being chosen for the sample as any other subset of  $k$  individuals. (Meng, 2013; Creswell, 2003).

Accordingly, a sample which is representative of the population is taken for the study. Keeping in view the homogeneous characteristics of the female borrowers in each selected bank, a small sample fairly represents the whole universe. Therefore the sample size for primary data collected from the three banks of issuing microcredit is 400 respondents, which have been selected according to a percentage of the women's clients of each three banks. For this purpose, major microfinance institutions by providing microcredit were selected which had a large clientele of borrowers and had been operating for at least 5 years in the field, i.e Khushhali Bank Limited (KBL), Tameer Microfinance Bank Limited (TML) and National Rural Support Program Bank (NRSP-B). The total numbers of female borrowers from selected microfinance institutions were counted and the proposed sample size was distributed proportionately to the number of female borrowers in each sampled area (Chaudhry & Nosheen, 2009).

Table 3.3  
*Microcredit Borrower's Population Summary*

<b>Names</b>	<b>Total</b>	<b>Males</b>	<b>Females</b>
Pakistan	4,341,960	3,039,372	1,302,588
Punjab	3,249,628	2,274,739	974,888
Southern Punjab	354,302	248,011	106,290
Bahawalpur	148,458	103,983	44,537

Source: Pakistan Microfinance Network (2016)

### 3.8.3 Data Source and Location

Data for the study was obtained from primary sources. This study is quantitative in nature, that commonly involves larger participants would allow a higher degree of generalization of the results. The participants of the study was consisted of 400 women from the population. The female borrower's belongs to the District Bahawalpur, Southern Punjab, Pakistan. Basically, Southern Punjab is 48.5 percent of the whole Punjab. According to the Report in Social and Living Standard Measurement Survey, (2014-2015) the Bahawalpur has the 12<sup>th</sup> most populous city in Pakistan, where 40 percent population is living below the poverty line in which 70 percent survives in the rural area while the rest of the 30 percent lives in urban area, under the municipality limits.

Table 3.4  
*Data source and Location of Bahawalpur, Southern Punjab, Pakistan*

<b>Bahawalpur Southern Punjab</b>							
Banks	Total No of Women Borrowers	Total Sample	Rural (70%)		Urban (30%)		
Khushhali Bank Limited (KBL)	3,000	128	Basti Dahri	45	Basti Chah	19	
			Dendar		Blouchan		
			Basti Kabristan	45	Basti Shau Channer	19	
				90		38	
Tameer Microfinance Bank Limited (TMBL)	1,450	108	Behrwan	38	Tibba Badar Shair	16	
			Ridaan Basti	38	Shams Colony	16	
				76		32	
National Rural Support Program (NRSP-B)	3,781	164	Basti Jhnagi Wali	57	Tibba Badar Shair	25	
			Lal Sohanra	57	Mousa Colony	25	
				114		50	
<b>Total</b>	<b>8,231</b>	<b>400</b>		<b>280</b>		<b>120</b>	

Source: Khushhali Bank Limited (KBL); Tameer Microfinance Bank Limited (TMBL) & National Rural Support Program (NRSP-B), (2016)

The above Table 3.4 shows the area of location of Bahawalpur, Southern Punjab, Pakistan. The total number of women borrowers of all three selected banks are 8,231 in which the total numbers of women borrowers of Khushhali Bank limited (KBL) are 3,000. By using



the Taro Yameen, (1973) formula rule of thumb, the total sample of 400 women borrower's were taken. In which 128 women borrowers are from Khushhali Bank Limited (KBL). It is further approached the two rural areas, in which 45 women borrowers from Basti Dahr Dendar and 45 women borrowers from Basti Kabristan. While the other two areas are of urban location, in which 19 women borrowers from Basti Chah Blouchan and 19 women borrowers Basti Shau Channer.

Similarly, the Tameer Microfinance Bank Limited (TMBL) has targeted 1,450 women borrowers. The sample of 108 women borrowers which are the 27 percent of the total sample has taken from under the covered area of Tameer Microfinance Bank Limited (TMBL). It has further come within reach of the two rural areas, in which 38 women borrowers from Behrwan and 38 women borrowers from Ridaan Basti. Whereas further two areas of urban location, has been approached which are 16 Tibba Badar Shair and 16 Shams Colony.

Likewise, the total numbers of women borrowers of National Rural Support Program (NRSP-B) are 3,781. The sample of 164 women borrowers which are the 41 percent of the total sample has taken from under the covered area of National Rural Support Programme (NRSP-B), which has further approached the two rural areas, in which 57 from Basti Jhnagi Wali and 57 from Lal Sohanra, however two rural areas have covered, in which 25 Tibba Badar Shair and 25 from Mousa Colony respectively. It is remembered that the rural area, Tibba Badar Shair of two banks the Tameer Microfinance Bank Limited (TMBL) and National Rural Support Program (NRSP-B) are same but the attitude of respondents was quite different. Thus, cross section data have been collected from door to door and women survey interviewed through a structured questionnaire. Medium of instructions is Urdu.

The interviews were administered personally as most of the respondents were illiterate and don't know how to read or write.

### **3.9 Descriptive Analysis**

Descriptive analysis is employed to address the research questions before extending to the multivariate analysis. In order to explain the descriptive statistics the current scholarship has assessed the average, standard deviation, minimum and maximum values of the variables.

### **3.10 Techniques of Data Analysis**

The regression models estimated have been specified in line with the objectives of the study. The different models are employed in this study: multinomial logit model (MNL) to capture the objective which has more than two choices and multinomial probit model (MNPM) for the robustness check of the model. The models are discussed in details in the following subsections. The regression model of multinomial logit model (MNL) analysis was used to analyze the data. This is because it is more suitable to this kind of analysis. As all the variables are categorical hence, the multinomial logit regression (MNL) has applied. Furthermore the study has estimated the marginal effect (complementary to the multinomial logit regression estimates as it relates the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease) and an estimate of the odds ratio (in logistic regression analysis indicate how the odds change when a particular explanatory variable changes).

#### **3.10.1 Multinomial Logit Model (MNL)**

Multinomial logit and probit regression is used when the dependent variable has more than two categorical outcomes. This model is also used to address the research question which has more than two discrete choices. The multinomial logit model (MNL) relates the

explanatory variables to the discrete choice to worsen, same and improve quality of life. The multinomial logit model (MNL) also does not require the assumption of normality, linearity or homoscedasticity. Hence there are few assumptions which are as under below.

### 3.10.1.1 Assumptions of MNL Formulation

1. The first most important assumption of the multinomial logit model (MNL) is the independence of irrelevant alternatives assumption (IIA assumption). This assumption requires that the addition or removal of alternative outcome categories does not affect the odds among the remaining outcome.
2. The second assumption of the multinomial logit model (MNL) is the number of cases to variable assumption for which a large sample size is required. Multinomial logit model (MNL) uses maximum likelihood estimation method thus it requires a large number of observations. The minimum number of cases per independent variable as suggested by Hosmer & Lemeshow, (2000) is 10 to 30.
3. The third assumption of the multinomial logit model (MNL) is that it maintains the homogeneity in responsiveness to attributes of alternatives across individuals (*i.e.*, an assumption of response homogeneity).
4. The fourth assumption of the multinomial logit model (MNL) is that the error variance-covariance structure of the alternatives is identical across individuals (*i.e.*, an assumption of error variance-covariance homogeneity).

These assumptions define mutual exclusiveness of alternatives with same variance-covariance, and identical error covariance of alternatives across individuals may not be appropriate if the extent of substitutability among alternatives differs across individuals (Long, 1997). The basic concept of multinomial logit model (MNL) regression was generalized from binary logistic regression. Long (1997) referred to the multinomial logit

model (MNL) as a simple extension of the binary logit model. Thus, the multinomial logit model (MNL) regression can be stated as a set of independent binary models. Given "m" possible outcomes, the multinomial regression estimates m-1 independent binary logistic regression. In addition, estimates of the parameter in multinomial logistic regression can be identified, compared to a baseline category. Therefore, assuming "y" is the dependent variable with "m" levels; and given that the "m<sup>th</sup>" level is the reference category, the multinomial logit model (MNL) is specified as shown as follows:

$$\text{logit}(y=j) = \ln \frac{p(y=j)}{p(y=m)} \quad (2)$$

Where j (each outcome)= 1, 2, ..., m - 1

Therefore, given that the outcome level "j" is numbered across 1 to m, and given that "m" is the base outcome, then we have m-1 estimates as shown in equation (3) to (5):

$$\ln \frac{p(y=1)}{p(y=m)} = \beta_1 X_i \quad (3)$$

$$\ln \frac{p(y=2)}{p(y=m)} = \beta_2 X_i \quad (4)$$

$$\ln \frac{p(y = m-1)}{p(y = m)} = \beta_{m-1} X_{m-1} \quad (5)$$

Therefore, in general terms, the model can be stated as

$$\ln \frac{p(y=j)}{p(y=m)} = \beta_0 + \beta_1^d X_1 + \beta_2 X_2 + \beta_k X_k, \quad (6)$$

Hence  $j = 1, 2, \dots, m - 1$

Based on this specification, the general multinomial logit model (MNL) analyzed in the study is as given in the following equation.

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<sup>d</sup>  $\beta_1 = \beta_k$  represents the increase in the logit for a unit increase in the covariate (when continuous) or the difference from one category to the next if the covariate is binary.

$$\ln \frac{\text{pr}(\text{QOL}_{\text{laggi}}=j)}{\text{pr}(\text{QOL}_{\text{laggi}}=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PE}_{\text{agg } i} + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + \epsilon_i \dots \dots \dots \quad (7)$$

$$j = 1, 2, \dots, m - 1$$

Where

QOL = Quality of life with three outcome levels numbered as 1= worsen quality of life 2 = same quality of life and 3= improved quality of life (base outcome)

j = different outcome levels: 1 and 2

m = base outcome (outcome level 3).

The multinomial logit model (MNL) above is estimated for three different categories which include worsen quality of life, same quality of life and improved quality of life. This is because the study is interested in determining those factors that affect the alternative quality of life choices of women borrowers during microcredit loan taking and their personal empowerment. This also indicates whether the explanatory role of the predictors change or not.

### 3.10.1.2 Advantages of Multinomial Logit Model (MNL)

In the light of as above mentioned the assumptions, multinomial logit model (MNL) has some advantages to give the solutions to solve the any problems. Wilson & Lorenz (2015) depicted that binary<sup>e</sup> dependent variables compel us to use a logit model instead of the Linear Probability Model. The “logit” model gives solution to these problems:

$$\ln [pb / (1 - pb)] = \beta_0 X + \epsilon_i$$

Where:

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<sup>e</sup> The variable which only take two values. For example; Male or Female, True or False, Yes or Not.

- $\ln$  is the natural log exp, where  $\exp=2.718$
- $p_b$  is the probability of occurrence of an event,  $p_b (Y=1)$
- $p_b / (1 - p_b)$  is the odds ratio
- $\ln[p_b / (1-p_b)]$  logit denotes the log of the odds of logistic regression (or) log of the odds ( $\log[p_b / (1-p_b)]$ )
- $\beta_0$  represents the value of the logit when the covariate is zero.

### 3.10.2 Multinomial as a Probit Model (MNPM)

In a typical discrete choice model, the probability that a person chooses a particular alternative, with the probability expressed as a function of observed variables that relate to both the alternatives and the person is central. Most times such alternatives may be few alternatives, say two (binary), but such alternatives may be more than two (polychromous); this is a multinomial choice models. Hence the difference between logistic and probit model is that the error term in a probit model is normally distributed, but in logistic model we have to make certain adjustments because the error term is logistic distributed. The logistic distribution constrains the estimated probabilities to lie between 0 and 1 (Long, 2012).

For example, the predictable probability is:

$$p_b = 1/[1 + \text{exponent}(-\alpha - \beta X)]$$

Therefore:

- if  $\alpha + \beta X = 0$ , then  $p_b = .50$
- as  $\alpha + \beta X$  becomes larger,  $p_b$  comes near to 1
- as  $\alpha + \beta X$  becomes small,  $p_b$  come near to 0.

The coefficient should be carefully interpreted. The slope of the coefficient shows the rate of change. The slope of the coefficient is explained as the change in the log odds as X

changes. This procedure is used to find out marginal effects in variables. Which is,  $\partial p_b / \partial \beta = \partial f(w) / \partial w (X\beta) \times \partial w (X) / \partial X$  where  $f(\beta X)$ .  $\beta$  is the cumulative frequency of continuous random variable, i.e. probability density function, which ranges from 0 to 1. Logit models and probit models are used extensively in such type of research where the dependent variable is binary or multinomial. There is a very small adjustment required to compare the coefficient of the both models (Long & Freese, 2006).

So it is preferable to use the logit model of the determinants of women borrower's quality of life. Figure 3.2 shows the difference between the logit models and probit models more elaborately.

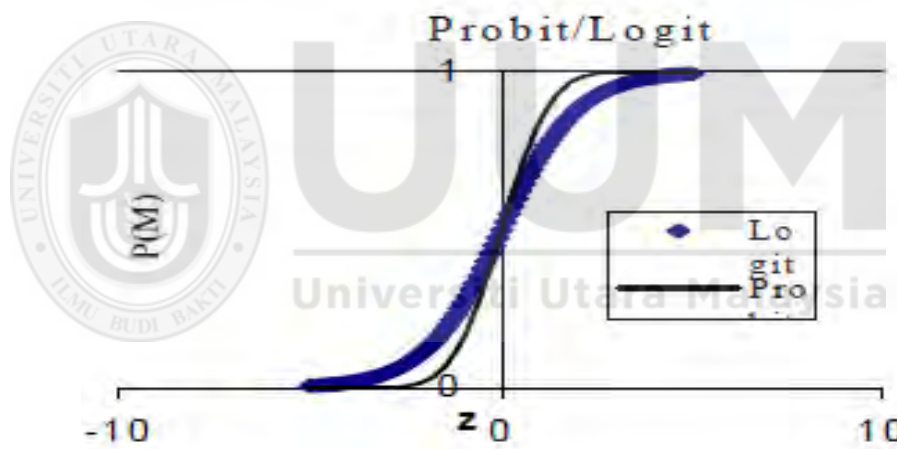


Figure 3.2  
*Probit/ logit Model*

### 3.10.3 Difference between Multinomial Logit Model (MNL) and Multinomial Probit Models (MNPM)

Multinomial probit and multinomial logit models are technically similar, but are different from the distribution of the error terms as above mentioned. Multinomial logit models (MNL) have errors which are independent and identically distributed as per to the type-1 extreme value distribution, which is also known as log Weibull distribution. The

multinomial probit model (MNPM) has errors which are not essentially independent, and are distributed as per to a multivariate normal distribution (Greene, 2000). This difference between multinomial probit and multinomial logit models may look rather minor, but in practice it has a large effect. The independent errors of multinomial logit model (MNLM) force an assumption called the independence of irrelevant alternatives assumption (IIA). Basically, independence of irrelevant alternatives (IIA) needs that an individual evaluation of an alternative, relative to other alternative should not change if a third (irrelevant) alternative is added to or removed from the analysis. When the independence of irrelevant alternatives (IIA) is violated, multinomial logit model (MNLM) is incorrectly specified and its coefficient estimates are inconsistent.

### 3.10.4 Model Estimation and Specification

To verify that the results of the estimation of the multinomial logit model (MNLM) are robust, this study also estimated by using the multinomial probit model (MNPM). Hence the model estimation and specification of the multinomial logit models (MNLM) are as follows.

#### (a) Model Estimation

Since the dependent variable is qualitative in nature and there are more than two options, multinomial choice models are used in estimating the relationship. McFadden & Train (2000) explained that a multinomial logit (MMNL) model is for discrete response. Estimation of this model can be done through the maximum likelihood estimation (MLE). The method provides estimation of the model's parameters. It estimates the product of the probabilities of the chosen alternative given the conditions of the binary independence (individual preferences) criterion:

$$\Pr (y_i = j | m_i) = \frac{\exp(m_i \beta_j)}{\sum_{j=0}^J \exp(m_i \beta_j)} \quad (8)$$



In the women borrowers' quality of life, some choices may be associated with waiting time for each option. According to Long (1997) the coefficients for a variable are the same for each outcome, but the values of the variables differ from each outcome. It remains to specify the multinomial logit model. Formally, the model can be expressed as follows:

$$P_{ij} \equiv \text{Prob}(Y_i = j | m_{ij}) = \frac{\exp(m'_{ij} \beta)}{\sum_{j=1}^J \exp(m'_{ij} \beta)} \quad (9)$$

Where the marginal effect of a specific alternative of women borrower's quality of life, on the probability of choosing a specific alternative,  $P_{ij}$ , is given by

$$\frac{\partial p_{ij}}{\partial x_m} = [1(j = m) - P_m] P_j \beta \quad (10)$$

Where the function  $1(j = m)$  equals one if  $j$  equals  $m$  and zero otherwise. Equation, (10) implies that the sign of the marginal effect depends on the sign of  $\beta$  multinomial on whether  $j = m$ . If  $j = m$ , then the bracketed expression is positive. Since  $P_j$  is also positive, then the sign of the marginal effect is the same as that of  $\beta$ . If  $j \neq m$ , then the bracketed expression is negative. Since  $P_j$  is positive, then the sign of the marginal effect is opposite to that of  $\beta$ , Eq. (10).

### **(b) Model Specification**

Normally, the multinomial logistic regression (MNL) model is described for the analysis of nominal and ordinal response data. However, the multinomial probit model (MNPM) can be applied only when there is a small number, usually three alternatives because for categories of four or more, numerical integration to obtain the probabilities are too costly for practical application in iterating likelihood maximization (Hedeker, 2003). Whereas, Ali and Haq (2006) applied the multinomial logit model (MNL) to examine the impact of women's autonomy and happiness. In the light of previous studies, this study addresses women borrowers quality of life measured in subjective measurement, the ordinal

responses are divided into three categories. The responses are in discrete values. We applied the multinomial logit model (MNL) to achieve the objective of the study. To verify that the results of the estimation of the multinomial logit model (MNL) are robust, this study also estimated by using the multinomial probit model (MNPM).

### **3.11 Empirical Model of Quality of life**

After clearly justifying the multinomial logit model (MNL), this study investigates the women borrowers' quality of life in rural area and those factors influence the women borrowers' quality of life. Different researcher used different factors that influence the women's quality of life dimensions such as health life improvement (HLI), economic life improvement (ELI), familial life improvement (FLI) and household life improvement (HHLI) (Jaffree & Ahmad, 2013; WHOQOL, 1995). Banu *et al.*, (2000) used income generating activities, while Mostofa *et al.*, (2008) used only age while, Rahman, Abedin, Zaman and Islam, (2008) used age, education, family size, household farm size, area, extension media contact, training, exposure, knowledge of aquaculture, family annual income and participation in aquaculture and Handy and Kassam (2004) used age, education, family size, income and participation in microfinance institutes. In the light of previous studies, this study selects the quality of life as dependent and microcredit (MC) and aggregate personal empowerment (PEagg) as independent variables, whereas to microcredit (MC) is measured by loan duration (LD), training (T) and loan size (LS). On other hand aggregate personal empowerment (PEagg) is measured by the sum of economic decision making (EDM), freedom of movement (FOM) and political socio-cultural awareness (PSA) are the variables to design the empirical model. A detail of the models is given below:

### Model 1

The econometric model 1, explained the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on aggregate quality of life (QOLagg) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{QOLaggi}=j)}{\text{pr}(\text{QOLaggi}=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PEagg}_i + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + e_i \dots \dots \dots \quad (11)$$

Hence the function of Aggregate quality of life (QOLagg), such as

$$\text{QOLagg} = f(\text{LD}, \text{T}, \text{LS}, \text{PEagg}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

QOLagg = Aggregate Quality of life; LD = Loan Duration; LS = Loan size; T = Training; (PEagg) = Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

### Model 2

The econometric model 2, explained the impact of microcredit (MC) and the dimensions of aggregate personal empowerment (PEagg) namely, economic decision making (EDM), freedom of movement (FOM) and political socio-cultural awareness (PSA) on aggregate quality of life (QOLagg) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{QOLaggi}=j)}{\text{pr}(\text{QOLaggi}=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{EDM}_i + \beta_5 \text{FOM}_i + \beta_6 \text{PSA}_i + \beta_7 \text{AGE}_i + \beta_8 \text{EDU}_i + \beta_9 \text{FS}_i + \beta_{10} \text{MS}_i + \beta_{11} \text{PAI}_i + e_i \dots \dots \dots \quad (12)$$

And

$$\text{QOLagg} = f(\text{LD}, \text{T}, \text{LS}, \text{EDM}, \text{FOM}, \text{PSA}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

QOLagg = Aggregate Quality of life; LS = Loan size; T = Training; LD = Loan Duration; EDM = Economic Decision Making; FOM = Freedom of Making; PSA = Political Social Awareness, AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 3**

The econometric model 3, explained the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on the dimension of quality of life measured by Health life improvement (HLI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{HLI}_i=j)}{\text{pr}(\text{HLI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PE}_{\text{agg } i} + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + e_i \dots\dots\dots (13)$$

And

$$\text{HLI} = f(\text{LD}, \text{T}, \text{LS}, \text{PEagg}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

HLI = Health life improvement; LS = Loan size; T = Training; LD = Loan Duration; PEagg= Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 4**

The econometric model 4, explained the impact of microcredit (MC) and the dimensions of aggregate personal empowerment (PEagg) namely, economic decision making (EDM), freedom of movement (FOM) and political socio-cultural awareness (PSA) on the

dimension of quality of life measured by Health life improvement (HLI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{HLI}_i=j)}{\text{pr}(\text{HLI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{EDM}_i + \beta_5 \text{FOM}_i + \beta_6 \text{PSA}_i + \beta_7 \text{AGE}_i + \beta_8 \text{EDU}_i + \beta_9 \text{FS}_i + \beta_{10} \text{MS}_i + \beta_{11} \text{PAI}_i + e_i \dots\dots\dots (14)$$

Hence the function of Health life improvement (HLI) such as

$$\text{HLI} = f(\text{LD}, \text{T}, \text{LS}, \text{EDM}, \text{FOM}, \text{PSA}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

HLI = Health life improvement; LS = Loan size; T = Training; LD = Loan Duration; EDM = Economic Decision Making; FOM = Freedom of Making; PSA = Political Social Awareness; PEagg = Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 5**

The econometric model 5, explained the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on the dimension of quality of life measured by Economic life improvement (ELI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{ELI}_i=j)}{\text{pr}(\text{ELI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PE}_{agg\ i} + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + e_i \dots\dots\dots (15)$$

And

$$\text{ELI} = f(\text{LD}, \text{T}, \text{LS}, \text{PEagg}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

ELI = Economic life improvement; LS = Loan size; T = Training; LD = Loan Duration; PEagg = Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 6**

The econometric model 6, explained the impact of microcredit (MC) and the dimensions of aggregate personal empowerment (PEagg) namely, economic decision making (EDM), freedom of movement (FOM) and political socio-cultural awareness (PSA) on the dimension of quality of life measured by Economic life improvement (ELI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{ELI}_i=j)}{\text{pr}(\text{ELI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{EDM}_i + \beta_5 \text{FOM}_i + \beta_6 \text{PSA}_i + \beta_7 \text{AGE}_i + \beta_8 \text{EDU}_i + \beta_9 \text{FS}_i + \beta_{10} \text{MS}_i + \beta_{11} \text{PAI}_i + e_i \dots\dots\dots (16)$$

Hence the function of Economic life improvement (ELI) such as

And

$$\text{ELI} = f(\text{LD}, \text{T}, \text{LS}, \text{EDM}, \text{FOM}, \text{PSA}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

ELI = Economic life improvement; LS = Loan size; T = Training; LD = Loan Duration; EDM = Economic decision Making; FOM = Freedom of Making; PSA = Political Social Awareness; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 7**

The econometric model 7, explained the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on the dimension of quality of life measured by Familial life improvement (FLI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{FLI}=j)}{\text{pr}(\text{FLI}=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PE}_{\text{agg } i} + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + e_i \dots\dots\dots (17)$$

Hence the function of Familial life improvement (FLI) such as

$$\text{FLI} = f(\text{LD}, \text{T}, \text{LS}, \text{PE}_{\text{agg}}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

FLI = Familial life improvement; LS = Loan size; T = Training; LD = Loan Duration; PE<sub>agg</sub> = Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 8**

The econometric model 8, explained the impact of microcredit (MC) and the dimensions of aggregate personal empowerment (PE<sub>agg</sub>) namely, economic decision making (EDM), freedom of movement (FOM) and political socio-cultural awareness (FOM) on the dimension of quality of life measured by Familial life improvement (FLI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{FLI}=j)}{\text{pr}(\text{FLI}=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{EDM}_i + \beta_5 \text{FOM}_i + \beta_6 \text{PSA}_i + \beta_7 \text{AGE}_i + \beta_8 \text{EDU}_i + \beta_9 \text{FS}_i + \beta_{10} \text{MS}_i + \beta_{11} \text{PAI}_i + e_i \dots\dots\dots (18)$$

And

$$\text{FLI} = f(\text{LD}, \text{T}, \text{LS}, \text{EDM}, \text{FOM}, \text{PSA}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

FLI = Familial life improvement; LS = Loan size; T = Training; LD = Loan Duration; EDM = Economic decision Making; FOM = Freedom of Making; PSA = Political Social

Awareness; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 9**

The econometric model 9, explained the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on the dimension of quality of life measured by Household life improvement (HHLI) of women borrowers of Pakistan.

$$\ln \frac{\text{pr}(\text{HHLI}_i=j)}{\text{pr}(\text{HHLI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{PE}_{\text{agg } i} + \beta_5 \text{AGE}_i + \beta_6 \text{EDU}_i + \beta_7 \text{FS}_i + \beta_8 \text{MS}_i + \beta_9 \text{PAI}_i + e_i \dots\dots\dots (19)$$

Hence the function of Household life improvement (HHLI) such as

$$\text{HHLI} = f(\text{LD}, \text{T}, \text{LS}, \text{PE}_{\text{agg}}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

HHLI = Household life improvement; LS = Loan size; T = Training; LD = Loan Duration; PEagg = Aggregate Personal Empowerment; AGE = Age; EDU = Education; FS = Family Size; MS = Marital Status and PAI = Personal Annual Income.

**Model 10**

$$\ln \frac{\text{pr}(\text{HHLI}_i=j)}{\text{pr}(\text{HHLI}_i=m)} = \beta_0 + \beta_1 \text{LD}_i + \beta_2 \text{T}_i + \beta_3 \text{LS}_i + \beta_4 \text{EDM}_i + \beta_5 \text{FOM}_i + \beta_6 \text{PSA}_i + \beta_7 \text{AGE}_i + \beta_8 \text{EDU}_i + \beta_9 \text{FS}_i + \beta_{10} \text{MS}_i + \beta_{11} \text{PAI}_i + e_i \dots\dots\dots (20)$$

And

$$\text{HHLI} = f(\text{LD}, \text{T}, \text{LS}, \text{EDM}, \text{FOM}, \text{PSA}, \text{AGE}, \text{EDU}, \text{FS}, \text{MS}, \text{PAI})$$

Where

HHLI = Household life improvement; LS = Loan size; T = Training; LD = Loan Duration; EDM = Economic decision Making; FOM = Freedom of Making; PSA = Political Social



Awareness; AGE = Age; EDU = Education; FS = Family size; MS = Marital Status and PAI = Personal Annual Income.

### **3.12 Summary**

This chapter explains the procedures followed to obtain empirical estimates on microcredit and personal empowerment on women borrower's quality of life in the Bahawalpur, Punjab, Pakistan. The chapter highlighted a conceptual framework, hypothesis to be tested, estimation method, variables to be measured, population and sample, and method of data collection. This enables the study to estimate data presented in chapter Four.



## CHAPTER FOUR

### RESULTS OF THE FINDINGS

#### 4.1 Introduction

This chapter presents and discusses the results of the survey and the econometric estimation of the quality of life of women borrowers' model. First, this study provides descriptive analyses of the survey sample. Then, the results of estimation of the multinomial logit model (MNL) of women borrowers' quality of life presented and discussed.

#### 4.2 Profile of the Respondents

This study describes the descriptive and econometric analysis. For better description and understanding, in descriptive analysis, the independent variables are categorized while for econometric analysis, this study uses the STATA and independent variable are not categorized. This section describes the background characteristics of the respondents considered in this study. The total number of 400 women was involved in the in-depth interview. The characteristics of the respondents are given below.

Table 4.1  
*Profile and Socio-Demographic Characteristics of Respondents*

Variables	Age (26-35)	Education (Secondary)	Family Size (5-6 members)	Marital Status (Married)	Personal Annual Income (150,000- 199,000)
<b>Loan Duration (LD) (12- 24 months)</b>	160	91	104	145	96
<b>Training (T) (3 days)</b>	120	99	117	99	50
<b>Loan Size (LS) (25,000 &amp; more)</b>	106	67	100	84	50
<b>Personal Empowerment (PE) (Sometimes ability)</b>	147	126	181	115	128
<b>Economic Decision Making (EDM) (Sometimes ability)</b>	153	101	167	136	113
<b>Freedom of Movement (FOM) (Sometimes ability)</b>	160	146	159	113	148

<b>Political Socio-cultural Awareness (PSA) (Sometimes ability)</b>	125	84	139	115	93
<b>Quality of Life (same QOL)</b>	123	118	150	103	109

The above Table 4.1 describes the profile and socio-demographic characteristics of the respondents taken from the cross tabulation. The characteristics of the respondents are described on the bases of their loan duration (LD), training (T), loan size (LS), personal empowerment (PE), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (FOM), quality of life (QOL), age (AGE), education (EDU), family size (FS), marital status (MS) and personal annual income (PAI).

There are five categories of loan duration (LD), the mostly occur category is (12-24) months, while the maximum 160 respondents in terms of age (AGE) lies between (25-36) years of age, 91 respondents have secondary education (EDU), 104 respondents have 5-6 member in the family (FS), 145 respondents having married status (MS) and 96 respondents have an annual personal income (PAI) of 150,000- 199,000 have a loan duration (LD) of (12-24) months.

Similarly, in case of training (T), there are five categories of training (T), in terms of days, the maximum days of training (T), is 3, 120 respondents have age (AGE) (25-36) years, 99 respondents have secondary education (EDU), 117 respondents have 5-6 member in the family (FS), 99 respondents having married status (MS) and 50 respondents have an annual personal income (PAI) of 150,000- 199,000 have 3 days training (T).

Furthermore, with respect to loan size (LS), there are five groups of loan size (LS) in terms of amount, the maximum amount taken is Rs/-25000- more, while the maximum 106

respondents in terms of age (AGE) lies between (25-36) years of age, 67 respondents have secondary education (EDU), 100 respondents have 5-6 member in the family (FS), 84 respondents having married status (MS) and 87 respondents have an annual personal income (PAI) of 150,000- 199,000 have a loan size (LS) of Rs/- 25000- more.

Likewise, in the case of aggregate personal empowerment (PEagg), there are three categories of aggregate personal empowerment (PEagg) in terms of having the ability, the mostly occurring category is sometimes ability, 147 respondents have age (AGE) (25-36) years, 126 respondents have secondary education (EDU), 181 respondents have 5-6 member in the family (FS), 115 respondents having married status (MS) and 128 respondents have an annual personal income (PAI) of 150,000- 199,000 have sometimes ability.

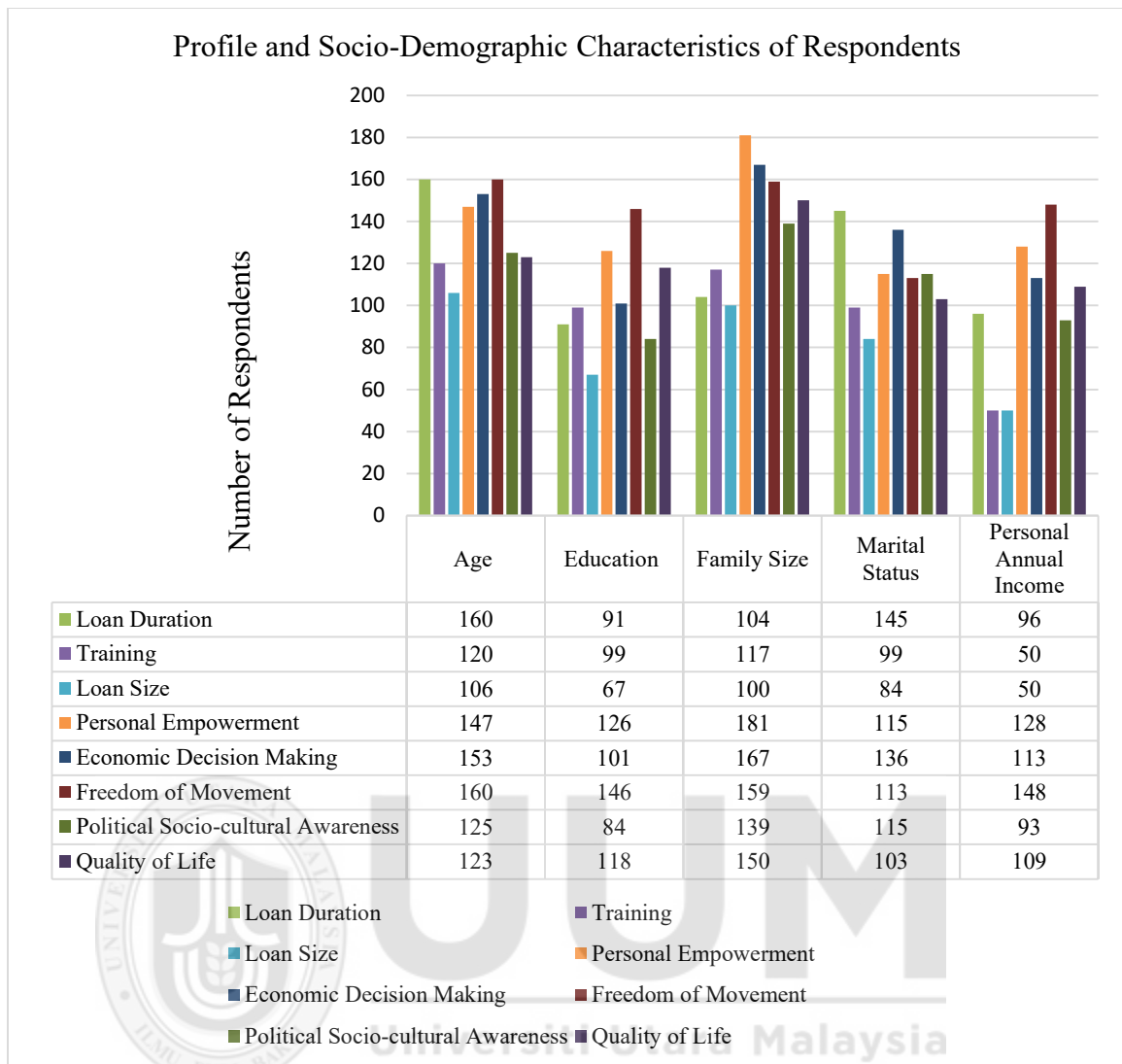
Moreover, with respect to economic decision making (EDM), there are three categories of the economic decision making (EDM) in terms of having the ability, the mostly occurring category is sometimes ability, the maximum 153 respondents in terms of age (AGE) lies between (25-36) years of age, 101 respondents have secondary education (EDU), 167 respondents have 5-6 member in the family (FS), 136 respondents having married status (MS) and 113 respondents have an annual personal income (PAI) of 150,000- 199,000 have sometimes ability.

Likewise, in case of Freedom of movement (FOM), there are three categories of freedom of movement (FOM) in terms of having the ability, the mostly occurring category is sometimes ability, 160 respondents have age (AGE) (25-36) years, 146 respondents have secondary education (EDU), 159 respondents have 5-6 member in the family (FS), 113

respondents having married status (MS) and 148 respondents have an annual personal income (PAI) of 150,000-199,000 have sometimes ability.

Also, in case of political socio-cultural awareness (PSA), there are three categories of political socio-cultural awareness (PSA) in terms of having ability, the mostly occurring category is sometimes ability, 125 respondents have age (AGE) (25-36) years, 84 respondents have secondary education (EDU), 139 respondents have 5-6 member in the family (FS), 115 respondents having married status (MS) and 93 respondents have an annual personal income (PAI) of 150,000- 199,000 have sometimes ability.

Moreover, with respect to quality of life (QOL), there are three categories of the quality of life, in terms of having quality of life, the mostly occurring category is the same quality of life the maximum 123 respondents in terms of age (AGE) lies between (25-36) years of age, 118 respondents have secondary education (EDU), 150 respondents have 5-6 member in the family (FS), 103 respondents having married status (MS) and 109 respondents have an annual personal income (PAI) of 150,000- 199,000 have same quality of life.



**Figure 4.1**  
*Profile and Socio-Demographic Characteristics of Respondents*

The Figure 4.1 is showing profile and socio-demographic characteristics of the respondents taken from the cross tabulation. The above Figure 4.1 depicted characteristics of the respondents are described on the bases of their loan duration (LD), training (T), loan size (LS), personal empowerment (PE), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (FOM), quality of life (QOL), age (AGE), education (EDU), family size (FS), marital status (MS) and personal annual income (PAI).

### 4.3 Descriptive Statistics of the Variables

Table 4.2, presents the descriptive statistics of the variables. This shows the average indication of the variable, the standard deviation, the minimum and the maximum values. The sample covers 400 microcredit women borrowers from three microfinance banks. Khushhali Bank (KBL), Tameer Microfinance Bank Limited (TMBL) and National Rural Support Program Bank (NRSP-B) correspondingly of Bahawalpur, Southern Punjab, Pakistan.

Table 4.2  
*Descriptive statistics of the Variables*

<b>Variables</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Standard Deviation</b>
Loan Duration	1	4	2.385	.62269
Training	1	5	1.72	.90389
Loan Size	3	5	4.335	.71697
Economic Decision Making	1	3	2.065	.55817
Freedom of Movement	1	3	2.09	.55014
Political Socio-cultural Awareness	1	3	2.0625	.64001
Economic Life Improvement	1	3	2.465	.7
Health Life Improvement	1	3	2.2275	.65713
Familial Life Improvement	1	3	2.2125	.73053
Household Life Improvement	1	3	1.9225	.50211
Quality of Life	1	3	1.97	.60829
Age	1	5	2.76	1.1382
Education	1	5	1.62	1.0493
Family Size	2	4	3.11	.63947
Marital Status	1	5	2.7575	1.0660
Personal Annual Income	1	5	3.405	1.0972

Source: "Survey, 2016 computed using STATA Version 13".

#### *Descriptive statistics of demographic characteristics*

The Table 4.2 shows the descriptive statistics of the data. The mean value for age (AGE) is 2.76 with a standard deviation 1.1382. Age (AGE) was measured on a four point scale. The mean value of age (AGE) indicates that the age range is (26-35), mostly respondents of microcredit borrowers are young, energetic and eager to work. Education (EDU) was measured on a five scale point and the mean value is 1.62 with a standard deviation of

1.0493 indicating a high degree deviation from the average. The family size (FS) was measured on five point scale and very high mean value 3.11 with a 0.6394 standard deviation, which describing that approximately each respondent have (5-6) members of family size (FS) including her. The mean value of marital status (MS) is 2.75 which are high and showing that the majority of the respondents were married couples. The mean value of the personal annual income (PAI) of the women is 3.4 with a 1.0972 standard deviation it depicted that respondents personal annual income (PAI) is at the lower medium level, but not moderate.

#### *Loan portfolio*

From the loan portfolio side the duration of loan (LD) shows a mean value of 2.3 which indicates that the majority of the respondents received microcredit (MC) more than two years ago. Training (T) show a low mean value 1.7 which points out that the women borrowers got the loan usage training not more than hardly one day. The mean value 4.3 for the loan size (LS) is moderate.

#### *Aggregate Personal empowerment*

As of aggregate personal empowerment (PEagg) variable, measured by the mean value of economic decision making (EDM) is 2.0, mean value of the freedom of movement (FOM) is 2.0 with both same standard deviations 0.55 and political socio-cultural awareness (PSA) is 2.0 with standard deviation 0.6 respectively.

#### *Quality of life*

The descriptive statistics of quality of life (QOL) were measured on a three point scale. The mean value of the economic life improvement (ELI) is 2.4 with a very low 0.7 standard deviation also indicating the economic life improvement (ELI) has slightly varied. The



health life improvement (HLI) mean value is 2.22 with a somewhat low 0.65 standard deviation which point out that the respondent's health life (HLI) has improved at low degree from the average. Similarly, the mean value of the familial life (FLI) is 2.21 along with a 0.73 standard deviation, correspondingly showing little improvement. The household life improvement (HHLI) illustrates a very low value of mean 1.9 indicating that mostly respondents have improved their household life improvement (HHLI) below the moderate level. Whereas the mean value of overall quality of life (QOL) is 1.97 with a standard deviation of 0.6 indicating the gradually improvement in quality of life (QOL).

#### **4.4 Normality Test**

Normality test is an essential part of the analysis that validates the specification in both theoretical and empirical research (Tabri, 2014). In research, many statistical values require a normal dataset or nearly normal for its acceptability. This study employed a joint influence of Skewness and Kurtosis normality test so as to achieve an unbiased result from the dataset obtained. Skewness<sup>6</sup> measure the probability distribution of variable with respect to its mean, while Kurtosis on the other hand measures the peak of a variable in terms of its probability distribution (Rindskopf & Shiyko, 2010). Although, Tabachnick and Fidell, (2013) assert that for a dataset of more than 200, the deviation from skewness and kurtosis normality will not make absolute difference. The normality shown in the Table 4.3 given below.

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<sup>6</sup> Skewness tails the direction of skew based on it departure from horizontal symmetry.

Table 4.3  
*Normality Test*

Variables	Min	Max	Skewness	Kurtosis
Loan Duration (LD)	1	4	.44154	3.0448
Training (T)	1	5	.72542	3.5094
Loan Size (LS)	3	5	-.59351	2.1265
Economic Decision Making (EDM)	1	3	.02380	3.1686
Freedom of Movement (FOM)	1	3	.04676	3.2088
Political Socio-cultural Awareness (PSA)	1	3	-.05496	2.4348
Quality of Life (QOL)	1	3	.014475	2.7041
Age (AGE)	1	5	.83672	2.5924
Education (EDU)	1	5	.43162	2.9643
Family Size (FS)	2	4	-.09956	2.4140
Marital Status (MS)	1	5	.75513	2.7256
Personal Annual Income (PAI)	1	5	-.33857	2.1271

Source: "Survey, 2016 computed using STATA Version 13".

Studies by West, Finch and Curran (1995) and Curran, West and Finch (1996) stressed that Skewness value should be less than 2, while Kurtosis value should be less than 7. Furthermore, Kline (2016) suggested a substantive value of greater than 3 for Skewness and greater than 10 for Kurtosis may indicate a problem. From this discussion above, the dataset of this study is normal because the Z-values range from -1 to 1 for Skewness and from 1 to 3 for Kurtosis which is below the given threshold. This can be seen using (see figure 4.2).

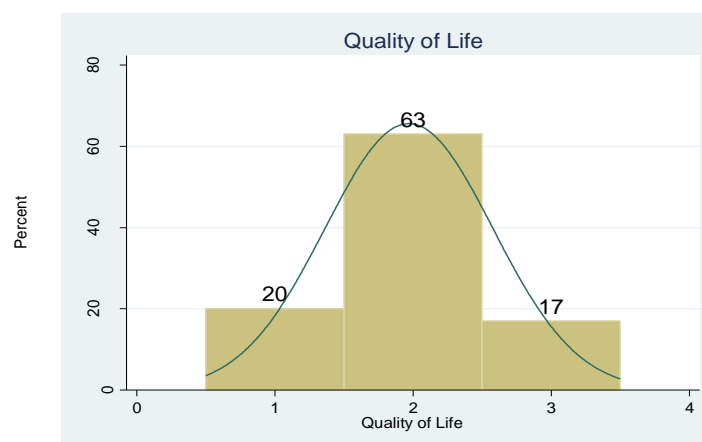


Figure 4.2  
*Distribution of Quality of Life*

#### 4.5 Diagnostic Tests for Multicollinearity

In our study, we used a relatively large number of explanatory variables. There are some concerns over whether our results are plagued by Multicollinearity, which occurs when two different explanatory variables (or more) actually measure the same thing, thereby precluding us from assessing the individual effect of an explanatory variable on women borrower's quality of life. So in the case of two or more variables that measure the same thing, if there is a perfect linear relationship among the predictors, the estimates for a regression model cannot be uniquely computed. To make sure that the variables are free from Multicollinearity the current study has tested for Multicollinearity by using two methods, by Pearson correlational analysis and by Variance Inflation Factor (VIF).

##### 4.5.1 Correlation Analysis

The emphasis of correlation analysis in this study is to show if variables within the dataset are related or not, and the extent of their variation. In correlation, the  $r$  value is constrained by  $-1 \leq r \leq 1$ ; such that a 0 value denotes no correlation, and the closer the  $r$  is to -1 and 1, the stronger the correlation (Bensman, 2004; Egghe & Leydesdorff, 2009). Similarly, Pallant (2007) suggested that to avoid the problem of Multicollinearity, the correlations among the independent variables should not exceed 0.70. Table 5.21 provides a summary of the results from the correlation analysis. The correlations ( $r$ ) among the independent variables did not exceed 0.70. Hence, the problem of Multicollinearity does not exist. Accordingly, there seems to be no need to drop any of the independent variable from our model specification.

Table 4.4  
*Checking for Multicollinearity by Correlation Matrix for Variables (paramid)*

	Age	Edu	FS	MS	PAI	LD	T	LS	EDM	FOM	PSA	ELI	HLI	FLI	HHLI	QOL	PEagg
AGE	1.0000																
EDU	-0.5725*	1.0000															
FS	0.1534*	-0.1839*	1.0000														
MS	0.5819*	-0.2540*	-0.0711	1.0000													
PAI	-0.0905*	0.1969*	0.2542*	-0.3229*	1.0000												
LD	0.3358*	-0.1260*	0.1074*	0.4921*	0.1527*	1.0000											
T	-0.2400*	0.3411*	-0.1744*	-0.3349*	-0.0033	-0.2995*	1.0000										
LS	0.0066	0.0079	-0.3156*	0.0738	-0.1570*	-0.2615*	-0.0277	1.0000									
EDM	0.3244*	-0.1624*	-0.0271	0.5404*	-0.0963*	0.3677*	-0.2217*	0.0143	1.0000								
FOM	-0.0575	0.1625*	0.0217	0.0629	0.1346*	-0.0209	0.0394	0.4380*	0.3155*	1.0000							
PSA	0.3991*	-0.2668	-0.0903*	0.5071*	-0.2538*	0.3608*	-0.1771*	0.1618*	0.5218*	0.5036*	1.0000						
ELI	-0.0640	0.0561	-0.0026	-0.1038*	0.2339*	0.1690*	-0.0255	0.2731*	0.1213*	0.3922*	0.3378*	1.0000					
HLI	-0.0206	-0.0504	-0.1074*	0.0038	0.1917*	0.0610	-0.0789	0.0985*	-0.0131	0.1581*	0.2521*	0.2162*	1.0000				
FLI	-0.0350	-0.0330	0.1162*	-0.0302	0.0112	0.0456	0.0601	0.1078*	0.0091	0.2267*	0.1270*	0.2621*	0.1183*	1.0000			
HHLI	0.0288	0.1249*	-0.1295*	0.0304	-0.0521	0.0877*	0.1403*	0.0027	0.0717	0.0525	0.0853*	0.0457	-0.0604	-0.0506	1.0000		
QOL	0.0403	-0.0097	0.0085	0.0119	0.1985*	0.1298*	-0.0362	0.2645*	0.1091*	0.4200*	0.3525*	0.5861*	0.5626*	0.5558*	0.2714*	1.0000	
PEagg	0.2707*	-0.2328*	-0.2102*	0.2891*	-0.2119*	0.1774*	-0.0429	0.2711*	0.6519*	0.6334*	0.8097*	0.3807*	0.1627*	0.1670*	0.1116*	0.3585*	1.0000

Source: "Survey, 2016 computed using STATA Version 13".

Note: AGE= Age, EDU= Education, FS= Family Size, MS= Marital Status, PAI= Personal Annual Income, LD= Loan Duration, T= Training, LS= Loan Size, EDM= Economic Decision Making, FOM= Freedom of Movement, PSA= Political Socio-cultural Awareness, ELI= Economic Life Improvement, HLI= Health Life Improvement, FLI= Familial Life Improvement, HHLI= Household Life Improvement, QOL= Quality of Life and PEagg= Aggregate Personal Empowerment.

#### 4.5.2 Checking for Multicollinearity Analysis

It is necessary to examine the correlation between the independent variables used in the analysis. Thus, the Table 4.4 presents pairwise correlation coefficients among the explanatory variables to detect whether any of them is highly correlated. The highest the correlation coefficients are between Political Socio-cultural Awareness (PSA) and Economic Decision Making (EDM) (0.52); Political Socio-cultural Awareness (PSA) and Freedom of Movement (FOM) (0.53); Quality of Life (QOL) and Economic Life Improvement (ELI) (0.58); Quality of Life (QOL) and Health life Improvement (HLI) (0.56); Quality of Life (QOL) and Familial Life Improvement (FLI) (0.55); age (AGE) and Education (EDU) (0.57); Age (AGE) and Marital Status (MS) (0.58); Economic Decision Making (EDM) and Marital Status (MS) (0.54); Political Socio-cultural Awareness (PSA) and Marital Status (MS) (0.50). However, these coefficients are below the benchmark of 0.7 given by Pallent (2007), and Bryman and Cramer (1997) and unlikely to lead to Multicollinearity. The existence or nonexistence of possible Multicollinearity is confirmed further by diagnostic tests. The study uses variance inflation factors (VIF) to test for Multicollinearity in Table 4.5.

Table 4.5  
*Checking for Multicollinearity using VIF*

<b>Variables</b>	<b>VIF</b>	<b>1/VIF</b>
Loan Duration (LD)	2.77	0.361
Training (T)	1.38	0.722
Loan Size (LS)	2.19	0.457
Economic Decision Making (EDM)	2.10	0.475
Freedom of Movement (FOM)	5.05	0.198
Political Socio-cultural Awareness (PSA)	2.96	0.337
Age (AGE)	2.53	0.394
Education (EDU)	1.94	0.515
Family Size (FS)	1.96	0.511
Marital Status (MS)	3.04	0.328
Personal Annual Income (MS)	2.83	0.353

Source: "Survey, 2016 computed using STATA Version 13".

Note: Mean VIF is 2.69

As a rule of thumb, a variable whose variance inflation factor (VIF) values are greater than 10 may merit further investigation. Tolerance, defined as  $1/VIF$ , is used by many researchers to check on the degree of collinearity. A tolerance value lower than 0.1 is comparable to a variance inflation factor (VIF) of 10. It means that the variable could be considered as a linear combination of other independent variables. Likewise, supported by Hair *et al.*, (2010). Variance inflation factor (VIF) values above 10 (which correspond to tolerance value below 0.10) indicate Multicollinearity problem. The in the Table 4.5 of variance inflation factor (VIF), the value of (LD), (T), (LS), (EDM), (FOM), (PSA), (AGE), (EDU), (FS), (MS) and (PAI), are 2.77, 1.38, 2.19, 2.10, 5.05, 2.96, 2.53, 1.94, 1.96, 3.04 and 2.83 correspondingly, which indicate absence of a Multicollinearity problem as the values fall below 10 for all the independent variables.

#### **4.6 Multinomial Regression Analysis**

The multinomial logistic regression model (MNLM) shows the estimates for microcredit (MC), aggregate personal empowerment (PEagg) and all demographic variables on women borrower's quality of life. The total number of samples consists of 400 women borrower's. In this section the estimates are explained and detailed comparisons of results are also discussed.

#### **4.7 Effect of Microcredit and Aggregate Personal Empowerment (PEagg) on aggregate Quality of life (Model 1)**

The current research analyzed the effect of microcredit (MC) measured by (LD, T, LS) and aggregate personal empowerment (PEagg) on aggregate quality of life (QOLagg) in model 1 respectively. The multinomial logit model (MNLM) was used to examine the effect of microcredit (MC) and aggregate of personal empowerment (PEagg) on

overall aggregate woman's borrower's quality of life (QOLagg). Later, the study determined whether our results are robust to different estimation results of the multinomial probit model (MNPM).

#### 4.7.1 Tests for Model Fit (Model 1)

The results of model fit tests are reported in Table 4.6, which shows the “tests for goodness of fit” model 1.

Table 4.6  
*Tests for Goodness of Fit (Model 1)*

Tests	Results (Model 1)
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.2349
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 171.76 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.6 shows that the Wald chi-square test statistic of 118.52 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.6, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not

very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### 4.7.2 Tests for Model Specification (Model 1)

Before we estimate the model, to check whether the model specification the independent irrelevant alternative (IIA) assumption. The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial logit model (MNL). The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. Hausman- McFadden specification test has been used to see if the model meets the independent irrelevant alternative (IIA) assumption.

Therefore, the null hypothesis tested here states that the odds between a pair of alternatives are independent of the remaining alternatives. Based on this, the test compares estimate coefficients of the full model to that of a restricted model in which one of the alternatives is omitted. A significant test is evidence against  $H_0$ . Furthermore, the selection of the base-outcome<sup>s</sup> is the outcome category “improve quality of life”. This is due to the fact the other two outcome categories (same quality of life and worsen quality of life) fall under the not improvement in the quality of life. Thus, “improve quality of life” is entirely distinct and considered appropriate as the base outcome. Table 4.7 presents the results of the independent irrelevant alternative (IIA) assumption test and shows that overall the model is statistically significant as the Prob > chi<sup>2</sup> = 0.0000.

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<sup>s</sup> To choose any of the categories as the reference. From the viewpoint of overall statistical quality of prediction by the model, the choice is an arbitrary (Gujrati, 2009)



Table 4.7

*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNLM (Model1)*

<b>Full sample Model 1</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen QOL	-2.723	10	1.000	For Ho
2 Same QOL	118.420	10	1.000	Against Ho
3 Improved QOL	-4.558	10	1.000	For Ho

Source: "Survey, 2016 computed using STATA Version 13".

The statistical evidence in Table 4.7 indicates the chi square of the "worsen quality of life" has negative sign. On the base of the studies of Cheng and Long (2007) and McFadden and Zarembka (1974) the negative value of chi-square does not indicate a violation of independent irrelevant alternative (IIA) assumption. Thus, the evidence of all the cases 1 and 3 is for Ho and therefore fail to reject the null hypothesis. Therefore the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model (MNLm).

#### **4.7.3 Impact of Microcredit and Aggregate Personal Empowerment on aggregate Quality of life (Model 1)**

The estimated result of the multinomial logistic model (MNLm) is presented in Table 4.8. In the model 1 existing research has evaluated the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on overall aggregate of quality of life (QOLagg) on poor women borrowers of Pakistan. It is concerned about how the predictor variables of these quality of life choices have changed with the concept that women might have altered their approaches through different possible options in response to the low quality of life.

Table 4.8

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Quality of Life (Full Sample of Model 1)*

		Quality of Life (Model 1)								
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen QOL</i>		<i>Same QOL</i>		<i>Worsen QOL</i>		<i>Same QOL</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	26.83***	-	17.69***	-	4.49	6.44	4.86	5.05	17.38***	11.69***
LD	0.342	-0.129***	1.572***	0.252***	1.407	0.70	4.817***	3.68	0.472	1.108***
T	-0.837***	0.0114	-1.052***	-0.102***	0.432***	-2.60	0.349***	-3.38	-0.561***	-0.675***
LS	-2.674***	-0.137***	-1.762***	-0.033	0.068***	-5.26	0.171***	-3.99	-1.803***	-1.245***
PEagg	-2.448***	-0.281***	-0.186	0.232***	0.086***	-4.95	0.829	-0.48	-1.5503***	-0.1359
AGE	0.293	0.003	0.300	0.023	1.340	1.00	1.350	1.17	0.257	0.219
EDU	-0.223	-0.057*	0.274	0.074**	0.800	-0.77	1.316	1.57	-0.026	0.281**
FS	-1.620***	-0.087**	-1.028***	-0.013	0.197***	-3.73	0.035***	-3.09	-0.904***	-0.599**
MS	-0.342	0.106***	-1.362***	-0.213***	0.710	-0.94	0.256***	-3.96	-0.223	-0.918***
PAI	-0.796***	-0.0004	-0.897***	-0.078***	0.450***	-3.11	0.407***	-4.96	-0.598***	-0.645***
	LR $\chi^2$ (18)	171.76	Log likelihood		-279.80062		Number of observations			400
	Prob > $\chi^2$	0.0000	Pseudo R <sup>2</sup>		0.2349					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.

The Table 4.8 indicates, the influence of the coefficients of each explanatory variable on the different quality of life choices in relation to the base outcome. Hence the coefficients estimate the likelihood of different quality of life options which include, worsen quality of life (1) and same quality of life (2) to the likelihood of omitting improved quality of life (3). In the process of the obtaining the result, therefore, outcome level (3) (omitted improve quality of life) is chosen as the base outcome. This is because, it is the highest category which the software chooses automatically. In addition, it is regarded which extreme way by which the women borrowers can adjust their quality of life. Moreover, apart from the choice to “omitted improve quality of life”, all other options (worsen and the same) are under the choice for quality of life.

The first, second and third research objectives of this study state that microcredit (MC) and aggregate personal empowerment (PEagg) have an impact on women borrowers' quality of life. Thus, the multinomial logit model (MNL) was used to examine the effect as follows. Far ahead, the study also discusses the estimation results of the marginal effect, odds ratios and multinomial probit model (MNL) to determine our results are robust.

#### **4.7.3.1 Multinomial Logit Estimates**

In the present study microcredit (MC) is measured in the form of loan duration (LD), training (T) and loan size (LS). Similarly, aggregate personal empowerment (PEagg) is measured as an aggregate of all its dimensions to check the impact of all the above mentioned variables on the aggregate of quality of life. Now, the present study, discuss them one by one.

**Loan Duration (LD):** In accordance with the expected prediction by this study, that the coefficients of (LD) of the model 1, the multinomial logit estimates that the one month increase in loan duration (LD) the multinomial log-odds for preferring in worsen quality of life found to be positively insignificant given the other variables are held constant. Whereas, in case of the same quality of life, it would be more likely to increase 1.5 relative to improve quality of life found as it is positively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant. This shows that as the loan duration (LD) of women borrowers of Pakistan increases, their same quality of life also increases. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and women's quality of life. The theory suggested that increase in loan duration (LD) improves quality of life, but in the case of present study increase in loan duration (LD) increases same quality of life as compare to improve quality of life as base category. Hence, the positive coefficient contradicts the prediction of the quality of life theory III as tested by (Ventegodt, Merrick & Andersen, 2003).

The findings of the present study in case of loan duration (LD) advocates that there are some other factors that affects quality of life. These are repeated borrowers have not benefited from loan service changes in terms of lower interest rates and larger loans; neither have they been able to emerge from the cycle of poverty due to regional economic constraints, despite timely repayment, and successful completion of loan duration (LD) Ali, Ali and Subhan, (2015) and Jaffree and Ahmad, 2013).

**Training (T):** In the model 1 of Table 4.8 the multinomial logit estimates as training (T) increase in days the multinomial log-odds for preferring in both cases worsen and

same quality of life would be expected to decrease by 0.8 units and 1.0 respectively, given the other variables are held constant. It means an increase in the training (T) the less likely to worsen and same quality of life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between training (T) and women's quality of life and provides strong evidence in support of the quality of life theory III. This because women in Pakistan, are less trained, so training will help them to improve their quality of life. Thus, the result is line with descriptive statistics of the study.

The findings also match the results of other studies such as Zeller, Lapenu and Greeley (2003) and Vera *et al.*, (2006) that training (T) and monthly meetings with loan officers and skill and development provision by the microcredit provider yield improved and significantly positive effect on quality of life in women users. Whereas Roslan and Karim (2009) have found a negative and significant relationship that did not have any training (T) (in relation to their business/project activity) has a higher probability to default as compared to those borrowers who had some training (T). This means that provision of training (T) and advice together with the loan by the same organization positively affects loan repayment also to improvements in borrower's skill which leads to better quality of life.

**Loan Size (LS):** In model 1, of Table 4.8 the multinomial logit estimates for a one unit increase in amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same quality of life would be expected to decrease by 2.6 units and

1.7 respectively, given the other variables are held constant. It means changes in the amount of loan size (LS) the less likely to worsen and same quality of life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women's quality of life and postulates strong evidence as the expectation of the quality of life theory III.

Thus, a plausible reason for the finding may be due to the fact that a woman taking microcredit (MC), she is supposed to be more experienced and wiser than the women who are not availing the microcredit (MC), because microcredit (MC) make women more stronger. Therefore microcredit (MC) is a kind of financial service that can be a source of financing since microcredit targets women. Based on the results, government and non-government agencies can increase women borrower's quality of life through promoting the microcredit institutions. The results of the present research are alike with Al-Mamun, Adaikalam and Wahab (2012); Jaffree and Ahmad (2013); Ali, Ali, and Subhan (2015).

***Aggregate Personal Empowerment (PEagg):*** As seen in the Table 4.8, results obtained of the parameters of model 1, the multinomial logit estimates in respect of overall or aggregate personal empowerment (PEagg) indicates that for an every unit increase in ability of aggregate personal empowerment (PEagg) the multinomial log-odds for preferring in the case worsen quality of life would be expected to decrease by 2.4 units, relative to improve quality of life. It means changes in the aggregate personal

empowerment (PEagg) the less likely to worsen the quality of life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between aggregate personal empowerment (PEagg) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between aggregate personal empowerment (PEagg) and women's quality of life and proposes strong evidence in the prediction of the quality of life theory III.

This finding does lend support to earlier studies. The finding of the study is consistent with the argument that it hypothesized that aggregate personal empowerment (PEagg) plays a vital role in the improvement of women borrowers quality of life. It brings power and control over decisions and resources among women. It increases their dignity and self-respect in the family as well as the community. They move independently in the society. Their contribution in household decision making also increases. Based on the results it may lead to improve the women borrower's quality of life. The findings of the present research are similar such as Khan and Rehman (2007) and Oladipo (2009). While in the case of the same quality of life the multinomial logit estimates in respect of overall or aggregate personal empowerment (PEagg) indicates that aggregate personal empowerment (PEagg) the multinomial log-odds in the same relative to improve quality of life is negatively insignificant based on parameter established, keeping all the other constant.

**Age (AGE):** As seen in the Table 4.8, results obtained of the parameters of the model 1, the multinomial logit estimates in respect of age (AGE) indicates that one year increase in age (AGE), the multinomial log-odds for preferring in both cases worsen

quality of life and same quality of life relative to improve quality of life, found to be insignificant, given the other variables are held constant. However, age was found to be insignificant in explaining the worsen as well as same quality of life as compare to base category improve quality of life.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between age (AGE) and women's quality of life is thereby not supported. Thus, the present study finding is consistent with Ali, Ali and Subhan (2015); Jafree and Ahmad, (2013); Chakraborty and Jayamani (2013).

**Education (EDU):** In model 1, apart from the other variables discussed above Table 4.8 results obtained of the parameters from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of worsen and the same quality of life relative to improve quality of life, found to be insignificant, given the other variables are held constant. The insignificance of education in case of worsen and same quality of life relative to improve quality of life indicates lack of support for the quality of life theory III as tested by (Ventegodt, Merrick & Andersen, 2003). Thus, the result of study indicates that education has an insignificant effect on women borrowers' quality of life. Thus, this study originates sufficient evidence to accept the null hypothesis which postulates that there is no relationship between education (EDU) and women quality of life. Therefore the alternative hypothesis which proposed there is relationship between education (EDU) and women quality of life is thereby not supported. In the current study, 62 percent



women borrowers had documented that they had zero education while only 21 percent rather they had a primary level education. This is because the female education is neglected in Pakistan. Moreover, some times the girls were only enrolled in the primary level, but they did not attend the school. Therefore, they have to leave their education due to conservative family pressures. That's why the present study did not find any difference in the quality of life of borrowers of zero education and primary education (Dawn, 2015).

**Family Size (FS):** In accordance with expected prediction, that the both coefficients of family size (FS) of model 1, from the multinomial logit model estimated that for one unit increase in number of family size (FS) the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to decrease by 1.6 unit and 1.0 respectively, relative to improve quality of life, found to be negatively significant, at 1 percent ( $p < 0.01$ ) given the other variables are held constant. It means that the more the family size (FS), the less likely to be worsen as well as same quality of life as compare to base category improve quality of life based on negative parameter established and provides strong evidence in support of the quality of life theory III.

The findings on family size effect suggested that large family size enables household members to take care of one another and have more respect towards women. It helps to improve quality of life with cooperation of large family size (FS). Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between family size (FS)

and women's quality of life is thereby supported. Hence the findings are supported such as Parveen (2007); Bandyopadhyay *et al.*, (2011); Silva, Fonseca, & Santos (2016).

**Marital Status (MS):** In the model 1 of Table 4.8 the multinomial logit estimates for a change in marital status (MS) of the respondents, the multinomial log-odds for preferring the in the case of worsen quality of life relative to improve quality of life found to be insignificant. While in the case of same quality of life than to improve the marital status (MS) multinomial log-odds for preferring would be expected to decrease by 1.3 units based on negative and significant at 1 percent ( $p < 0.01$ ) parameter established given the other variables are held constant. It means that as marital status (MS) changes, the less likely to same quality of life than to improve. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between marital status (MS) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's quality of life and provides strong evidence in support of the quality of life theory III. The finding of the study is consistent with the previous studies such as Nabahat (2014) and Ali, Ali and Subhan (2015).

**Personal Annual Income (PAI):** As seen in the Table 4.8, results obtained of the parameters of the Model 1, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that for one unit increase in the amount of personal annual income (PAI) the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to decrease by 0.7 units and 0.8 respectively, relative to improve quality of life. It means that the more the personal annual income (PAI) the less likely to worsen and same quality of life than to

improve, based on negative and significant at 1 percent ( $p < 0.01$ ) parameter established. Hence the more the personal annual income (PAI) the better the quality of life, given the other variables is held constant.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between the personal annual income (PAI) and women quality of life. Therefore the alternative hypothesis which proposed there is a relationship between the personal annual income (PAI) and women quality of life in support of the quality of life theory III. The findings is in line with the previous studies such as Azid, Ejaz and Alamas (2010); Khan (2010); Noreen (2011).

#### **4.7.3.2 The Marginal effect Estimates**

The marginal effects presented in Table 4.8 are also complementary to the multinomial logit regression estimates as it relates the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. For categorical variables with more than two discrete choices, the marginal effect reveals the difference in predicted probabilities for each comparison category relative to the base category (Cameron & Trivedi, 2009). Average Marginal Effect (AME) has been used for the purpose of this study. The average marginal effect is preferred to the Marginal Effect at Means (MEM) as some authors have argued that the latter may not indicate a good reflection of the marginal effect on values other than the mean. Table 4.8 presents the marginal effect on the different payout choices based on the expanded model. So, in the marginal effects the variables (LD), (T), (LS), (PEagg), (EDU), (FS), (MS) and (PAI) found to be significant while (AGE) was insignificant correspondingly.

**Loan Duration (LD):** Moreover the marginal effects illustrated that as one unit increase in the months of loan duration (LD) then the probability of worsen quality of life relative to improve quality of life will decrease by 12.9 percent found to be significant, in model 1, ceteris paribus. This means that increase in the loan duration (LD) improves the quality of life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan duration (LD) then the probability of same quality of life relative to improve quality of life will increase significantly by 25.2 percent keeping all other variables remain constant. This means that increase in the loan duration (LD) the quality of life remains the same.

**Training (T):** Similarly, the marginal effects illustrated that as one unit increase in the days of training (T) then the probability of same quality of life relative to improve quality of life will decrease by 10.2 percent found to be significant in model 1, even though holding all other variables remain constant. This means that increase in the training (T) improves the quality of life of women borrowers of Pakistan.

**Loan Size (LS):** Further the marginal effects showed that as one unit increase in the amount of loan size (LS) then the probability of worsen quality of life relative to improve quality of life will decrease significantly by 13.7 percent in model 1, ceteris paribus. This means that increase in the loan size (LS) improves the quality of life of women borrowers of Pakistan.

**Aggregate Personal Empowerment (PEagg):** Moreover, the marginal effects illustrated that as one unit increase in the ability of aggregate personal empowerment

(PEagg) then the probability of worsen quality of life relative to improve quality of life will decrease by 28.1 percent found to be significant, in model 1 ceteris paribus. This means that increase in the aggregate personal empowerment (PEagg) improves the quality of life of women borrowers of Pakistan.

Instead, the marginal effects portrayed that as one unit increase in aggregate personal empowerment (PEagg) then the probability of same quality of life relative to improve quality of life will increase by 23.2 percent but highly significant in model 1. However, holding all other variables remain constant vice versa. This means that increase in the aggregate personal empowerment (PEagg) the quality of life remains the same.

**Age (AGE):** Furthermore, the marginal effects illustrated that as one unit increase in years of age (AGE) the probability of both cases worsen and same quality of life relative to improve quality of life is insignificant in model 1, even though holding all other variables remain constant. This means that age (AGE) has no effect on quality of life of women borrowers of Pakistan.

**Education (EDU):** Similarly, the marginal effects portrayed that as one unit increase in years of education (EDU) then the probability of worsen quality of life relative to improve quality of life will decrease by 5.7 percent found to be significant in model 1, ceteris paribus. On the other hand, the marginal effects explained that as one unit increase in years of education (EDU) then the probability of same quality of life relative to improve quality of life will increase by 7.4 percent highly significant in model 1, even though remaining all other variables held constant. This means that education (EDU) has no effect on quality of life of women borrowers of Pakistan.

**Family Size (FS):** Likewise the marginal effects illustrated that as one unit increase in the number of family size (FS) then the probability of the case of worsen quality of life relative to improve quality of life will decrease by 8.7 percent significantly respectively in model 1, ceteris paribus. This means that increase in the family size (FS) improves the quality of life of women borrowers of Pakistan.

**Marital Status (MS):** In addition, the marginal effects illustrated that as marital status (MS) changes, the probability of worsen quality of life relative to improve quality of life will rise 10.6 percent, found to be significant in model 1, even however keeping all other variables remain constant. This means that even with changes in the marital status (MS) the quality of life remains the same.

In contrast, the marginal effects depicted that as marital status (MS) changes the probability of same quality of life relative to improve quality of life will decrease by 21.3 percent significantly in model 1, ceteris paribus. This means that changes in the marital status (MS) improves the quality of life of women borrowers of Pakistan.

**Personal Annual Income (PAI):** Besides the marginal effects demonstrated that as one unit increase in the amount of personal annual income (PAI) then the probability of the case of same quality of life relative to improve quality of life will decrease 7.8 percent found to be significant, in model 1, even though persisting all other variables remain constant. This means that increase in the personal annual income (PAI) improves the quality of life of women borrowers of Pakistan.

#### 4.7.3.3 Odds Ratio Estimates

Logistic estimates are presented in terms of the logit coefficients or odds ratio. Besides obtaining the coefficients presented in Table 4.8, it is important to obtain the odds ratio. This is because the odds ratio presents an easier alternative to interpreting the estimates. More so, the odds ratio is considered to be more informative (Menard, 2002). This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change.

Odds are the ratio of probability of an event occurring to the probability of the event not occurring (Gujarati, 2004). An odds ratio greater than 1 corresponds to a positive logit coefficient while the odds ratio of less than one corresponds to a negative logit coefficient. The odds ratio in this study is the ratio of the probability of “worsen QOL” to the probability of “improved QOL” and “same QOL” to the probability of “improved QOL”. Hence the Table 4.8 presents the odds ratio based on the expanded model of the multinomial logistic regression in terms of relative risk ratios obtained after running the multinomial logit model. Hence the Odds ratio for each explanatory variable is interpreted given that the other variables in the model are held constant. So in this the odd ratios of (LD), (T), (LS), (PEagg), (FS), (MS) and (PAI) found to be significant while (AGE) and (EDU) were insignificant correspondingly.

**Loan Duration (LD):** Similarly, the Table 4.8 indicates that if loan duration (LD) increase by one point, the odds of preferring in the case same quality of life would be

expected to increase 4.8 units in that order of relative to improve quality of life in model 1.

**Training (T):** Furthermore, in model 1 the Table 4.8 depicts that if training (T) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.4 and 0.3 units in turn of relative to improve quality of life.

**Loan Size (LS):** Besides in model 1 the Table 4.8 describes that if loan size (LS) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.06 and 0.1 units in that order of relative to improve quality of life.

**Aggregate Personal Empowerment (PEagg):** In response of model 1 the Table 4.8 refers that if aggregate personal empowerment (PEagg) increase by one point, the odds of preferring in the case worsen quality of life would be expected to decrease 0.08 units accordingly of relative to improve quality of life vice versa.

**Age (AGE):** Similarly, the Table 4.8 shows that if age (AGE) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life found to be insignificant relative to improve quality of life in the model 1.

**Education (EDU):** Consequently, the Table 4.8 shows that if years of education (EDU) increase by one point, the odds of preferring in both cases worsen quality of life and



same quality of life found to be insignificant relative to improve quality of life in model 1.

**Family Size (FS):** Likewise, the Table 4.8 shows that if family size (FS) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.1 and 0.03 units correspondingly of relative to improve quality of life in model 1.

**Marital Status (MS):** Moreover, in model 1 the Table 4.8 point out that if marital status (MS) changes, the odds of preferring in the case of same quality of life would be expected to decrease 0.2 units consisting of relative to improve quality of life.

**Personal Annual Income (PAI):** In the same way, in concert from the Table 4.8 illustrates that personal annual income (PAI) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.4 and 0.4 units respectively of relative to improve quality of life in model 1.

#### **4.7.3.4 Multinomial Probit Model Estimates**

It is necessary to assess the model for the robustness of its key findings. Thus, it is expected that the main conclusions as derived from the signs and significance level of key variable(s) should hold even when the variables are subjected to different model specification. Therefore, an alternative measure of quality of life is employed for robustness check. In the results estimation of the multinomial logit model that women borrowers who had microcredit and personal empowerment have improved their quality of life. To verify the results are robust, it also estimated by using the multinomial probit

model. Table 4.8 shows that overall the model is statistically significant as the Prob  $> \chi^2 = 0.0000$ . So, in the probit model the variables loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PEagg), education (EDU), family size (FS), marital status (MS) and personal annual income (PAI) found to be significant while age (AGE) was insignificant correspondingly.

**Loan Duration (LD):** Correspondingly, the result of the variable loan duration (LD) in model 1 confirms our findings from the Table 4.8. The coefficients marked very strong similarity with the assessed results in the case of same quality of life as compare to base category improve quality of life and found to be significantly positive. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 1.

**Training (T):** Similarly, an estimation of the variable training (T) in model 1 the coefficients signified the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Henceforth the results highlighted that all the results are consistent with the results of the multinomial logit model 1.

**Loan Size (LS):** An assessment of the variable loan size (LS) in model 1 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 1.

**Aggregate Personal Empowerment (PEagg):** Consequently, an evaluation of the variable aggregate personal empowerment (PEagg) in Model 1 the coefficients specified the high robust similarity with the evaluated results in the case of worsen quality of life compared with improved quality of life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 1.

**Age (AGE):** Correspondingly, the result of the variable age (AGE) in model 1 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same quality of life as compare to base category improve quality of life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 1.

**Education (EDU):** In the estimated results of the variable education (EDU) showed the high robust similarity with the evaluated results in worsen quality of life. It determines that might be having the education (EDU) the lesser for worsen quality of life as compare to base category improve quality of life. In contrast, the estimates of education (EDU) depicted that there is a slight difference under the category (2) in the same quality of life found to be positively significant. Henceforth the results are in line with the results of multinomial logit model 1.

**Family Size (FS):** Accordingly, an evaluation of the variable family size (FS) in model 1 the coefficients indicated the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of

life found to be significantly negative. Hence forward the results point out that all the results are reliable with the results of the multinomial logit model 1.

**Marital Status (MS):** Consequently, an assessment of the variable marital status (MS) in the model 1 the coefficients specified the high robust similarity with the evaluated results in the case of same quality of life as compared to improve quality of life as base, found to be negatively significant. Therefore, the results point out that all the results are consistent with the results of the multinomial logit model 1.

**Personal Annual Income (PAI):** In view of personal annual income (PAI) in model 1 the coefficients signposted the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Henceforth the results highlighted that all the results are consistent with the results of the multinomial logit model 1.

Hence, in conclusion, it is evident from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining quality of life of the women borrowers of Pakistan. While the findings of the aggregate personal empowerment have also a significant relationship with quality of life. Moreover, in case of demographic variable family size, marital status, personal annual income has significant relationship with quality of life. In contrast age and education have no effect on the quality of life.

Thus, the findings of the study revealed that the significant relationship between aggregate personal empowerment and quality of life depicted that aggregate personal

empowerment is the main determining factor of quality of life. Therefore, it is clear from the findings that in order to improve quality of life of women borrowers of Pakistan it should not be focused only on microcredit but aggregate personal empowerment, must be coming together with microcredit. Aggregate personal empowerment leads to personal growth of women borrowers of Pakistan that will further effects quality of life. So. It is evident from the result of the study that not only microcredit played important role in improving quality of life, but aggregate personal empowerment has also an important determinant of quality of life. Now the present research further examined the impact of the three domains of the aggregate of the personal empowerment with quality of life, which are as follows.

#### **4.8 Effect of Microcredit and Dimensions of Personal Empowerment on Aggregate Quality of life (Model 2)**

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM & PSA) on Aggregate Quality of life (QOL) in model 2 respectively. The multinomial logit model was used to examine the effect of loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political social awareness (PSA), age (AGE), education (EDU), marital status (MS), family size (FS) and personal annual income (PAI). Later, we also discuss the estimation results of the multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

##### **4.8.1 Tests for Model Fit (Model 2)**

The results of model fit tests are reported in Table 4.9, which shows the “tests for goodness of fit” model 2.

Table 4.9  
*Tests for Goodness of Fit (Model 2)*

Tests	Results
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.2661
Percentage of Correct Prediction	PCP= 83.75%

Source: "Survey, 2016 computed using STATA Version 13".

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 194.54 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.9 shows that the Wald chi-square test statistic of 130.69 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.9, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### **4.8.2 Test for Model Specification (Model 2)**

Sooner than, we estimate the model, to check whether the model specification the Independent Irrelevant Alternative (IIA) assumption. The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. The test is based on the notion that the choice probability of any two alternatives is not

affected by the other alternatives. Hausman- McFadden specification test has been used to see if the model meets the independent irrelevant alternative (IIA) assumption. The null hypothesis tested here states that the odds between a pair of alternatives are independent of the remaining alternatives.

Based on this, the test compares estimate coefficients of the full model to that of a restricted model in which one of the alternatives is omitted. A significant test is evidence against  $H_0$ . Furthermore, the selection of the base-outcome<sup>h</sup> is the outcome category “improve quality of life”. This is due to the fact the other two outcome categories (same quality of life and worsen quality of life) fall under the not improvement in the quality of life. Thus, “improve quality of life” is entirely distinct and considered appropriate as the base outcome. Table 4.10 presents the results of the independent irrelevant alternative (IIA) assumption test and shows that overall the model is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

Table 4.10  
*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model 2)*

<b>Full sample Model 2</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen QOL	-4.998	12	1.000	For Ho
2 Same QOL	-30.801	12	1.000	For Ho
3 Improved QOL	-4.122	12	1.000	For Ho

Source: “Survey, 2016 computed using STATA Version 13”.

The statistical evidence in Table 4.10 indicates the chi square of the “worsen quality of life” has negative sign. On the base of the studies of Long and Freese (2006) and

<sup>h</sup> To choose any of the categories as the reference. From the viewpoint of overall statistical quality of prediction by the model, the choice is an arbitrary (Gujrati, 2009)

McFadden (1984) the negative value of chi-square does not indicate violation of independent irrelevant alternative (IIA) assumption. Thus, the evidence of all the cases 1, 2 and 3 are for  $H_0$  and therefore fail to reject the null hypothesis. Therefore the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.8.3 The impact of Microcredit and Dimensions of Personal Empowerment on Aggregate Quality of life (Model 2)**

In model 2 the research has evaluated the impact of age, education, marital status, family size, personal annual income, loan duration, training, loan size, economic decision making, freedom of movement and political social-cultural awareness on overall aggregate of quality of life of poor women borrowers.

The first and second sub-research objectives of the present scholarship is that microcredit (MC) and the three domains; economic decision making (EDM), freedom of movement (FOM) and political social-cultural awareness (PSA) of aggregate personal empowerment (PEagg) has an impact on women borrowers' quality of life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model. Thus, the results of the multinomial logistic regression are presented in Table 4.11. The table shows the estimate of the model 2.



Table 4.11

*Results of Multinomial Logit & Marginal, Odds Ratio and Probit Model Effect Estimation on Quality of Life (Full Sample of Model 2)*

Dependent Variable	Quality of Life (Model 2)									
	Multinomial Logit model				Odds Ratio				Probit Model	
	<i>Worsen QOL</i>		<i>Same QOL</i>		<i>Worsen QOL</i>		<i>Same QOL</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
Independent Variable	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	21.89***	-	12.80***	-	3.24	5.02	3651	3.86	13.95***	7.982***
LD	0.522	-0.103**	1.546***	0.207***	1.686	0.85	4.696***	2.91	0.015	0.966***
T	-0.698**	-0.001	-0.759**	-0.054*	0.497**	-2.07	0.467**	-2.52	-0.467*	-0.471**
LS	-1.829***	-0.134***	-0.756*	0.0661	0.160***	-3.25	0.469*	-1.67	-1.300***	-0.585*
EDM	1.532**	-0.001	1.706***	0.127**	4.631**	2.51	5.512***	3.26	0.756*	0.979***
FOM	-0.899	0.025	-1.233**	-0.114	0.406	-1.20	0.291**	-2.32	-0.534	-0.787*
PSA	-3.320***	-0.278***	-1.055*	0.174***	0.036***	-4.32	0.348*	-1.88	-1.952***	-0.578
AGE	0.772**	0.015	0.704**	0.037	2.165**	2.08	2.022**	2.51	0.489*	0.412*
EDU	-0.378	-0.054*	0.467**	0.0837**	0.962	-0.12	1.596**	2.35	-0.146	0.390**
FS	-1.405***	-0.072	-0.875**	0.007	0.245***	-2.81	0.416**	-2.50	-0.690**	-0.400*
MS	-0.424	0.112***	-1.528***	-0.215***	0.654	-0.83	0.216***	-3.25	-0.126	-0.925***
PAI	-1.089***	-0.009	-1.113***	-0.073**	0.336***	-3.46	0.328***	-4.78	-0.699***	-0.700***
	LR $\chi^2$ (22)	194.59	Log likelihood		-268.38594		Number of observations		400	
	Prob > chi <sup>2</sup>	0.0000	Pseudo R <sup>2</sup>		0.2661					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.

#### 4.8.3.1 Multinomial Logit Estimates

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM & PSA) on aggregate of quality of life. The multinomial logit model was used to examine the effect of loan duration, training, loan size, economic decision making, freedom of movement, political socio-cultural awareness, age, education, marital status, family size and personal annual income on aggregate of quality of life. Later, we also discuss the estimation results of the multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

***Loan Duration (LD):*** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 2, the multinomial logit model estimated that for an every unit increase in the months of loan duration (LD) the multinomial log-odds for preferring in case of worsen quality of life relative to improve quality of life, found to be positively insignificant given the other variables are held constant. In contrast, in case of the same quality of life, it would be more likely to increase 1.5 relative to improve quality of life found to be positively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant. This means as the loan duration (LD) increases the same quality of life as compared to improve quality of life as a base category also rises. This shows that as the loan duration of women borrowers of Pakistan increases their same quality of life also increases.

There are many reasons for this phenomenon such as inflation, interest rate, economic constraints and long duration of loan leads towards the failure of repayments. Thus, this study found sufficient evidence to reject the null hypothesis which postulate that there

is no relationship between loan duration (LD) and women's quality of life, it is supported by many researches such as Jaffree and Ahmad, (2013); Rudrabatla, Roy and Kumar, (2015); Ali, Ali and Subhan, (2015). Thus the significance of same quality of life contradicts the prediction of the quality of life theory III. Which focused that loan duration of women borrowers positively increase the improve quality of life. In this case it contradicts with this concept.

**Training (T):** In the model 2 of Table 4.11, the multinomial logit estimate for a one unit increase in days of training (T) the multinomial log-odds for preferring in both cases worsen and same quality of life would be expected to decrease by 0.6 units and 0.7 respectively, given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their worsen and same quality of life decreases based on negatively significant at 5 percent ( $p < 0.05$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between training (T) and women's quality of life is supported by many researches such as Karlan and Valdivia, (2011); Valdivia, (2013). It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training and improve quality of life.

**Loan Size (LS):** In model 2, the Table 4.11 the multinomial logit estimate for a one unit increase in amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same quality of life relative to improve would be expected to decrease by 1.8 unit and 0.7 respectively, given the other variables are held constant. It means

increase in the loan size (LS) the less likely to decrease in worsen and same quality of life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) and 10 percent ( $p < 0.10$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women's quality of life. Therefore the alternative hypothesis which proposed there is relationship between loan size (LS) and women quality of life, it is in line with the previous studies such as Saleem *et al.*, (2011); Al-Mamun, Adaikalam and Wahab (2012). It postulates strong evidence as the expectation of the quality of life theory III. Hence, it is proved that when women borrowers have credit it will lead them towards good quality of life which is the basis of quality of life theory III.

***Economic Decision Making (EDM):*** As seen in the Table 4.11, results obtained of the parameters of model 2, from the multinomial logit model estimates. The one unit increase in the ability of economic decision making (EDM) the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to increase 1.5 and 1.7 relative to improve quality of life respectively. It found to be positively significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ) respectively given the other variables are held constant. It shows an increase in the ability of economic decision making (EDM) the most likely to increase in both worsen and same quality of life than to improve, based on positive and significant parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between economic decision making (EDM) and women quality of life. Thus the coefficient contradicts the prediction of the quality of life theory III.

Hence the logic behind is that there are some women headed households where women need to take major decisions, or there are situations where the view of the older women (mother-in-law, grandmother, mother/aunt) are likely to play a crucial role in decision-making within the family, such as sending girls to school or college, girl's marriage, etc. At the same time, men usually have more say in decisions relation to sale/purchase of property, livestock or other financial matters. That's why women did not make economic decisions due to cultural barriers in Pakistan (Ali & Haq, 2006).

***Freedom of Movement (FOM):*** In model 2, the Table 4.11 the multinomial logit estimate for a one unit increase in the ability of freedom of movement (FOM) the multinomial log-odds for preferring in case of worsen quality of life than to improve is found to be insignificant. Whereas in case of same quality of life than to improve the multinomial log-odds for preferring would be expected to decrease by 1.2 units based on negatively significant at 5 percent ( $p < 0.05$ ) parameter established, given the other variables are held constant. It means an increase in the ability of freedom of movement (FOM) the less likely to decrease the same quality of life than to improve. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between freedom of movement (FOM) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between freedom of movement (FOM) and women's quality of life and postulates strong evidence as the expectation of the quality of life theory III.

Thus, a plausible reason for the finding in Pakistan, mostly women who are personally empowered with the freedom of movement go out-door for her business purpose. This enhances her confidence to go outside by going to the banks, markets, and other places

on her own. Usually, they do not need to get permission to go outside their home. Hence, findings support by the other researchers that also reported a positive influence of freedom of movement on poor women borrower's quality of life, such as Nessa, (2011); Yasmeen and Karim (2014).

***Political Socio-cultural Awareness (PSA):*** In the model 2 of Table 4.11 the multinomial logit estimate for a one unit increase in the political socio-cultural awareness (PSA) the multinomial log-odds for preferring in both cases worsen and same quality of life would be expected to decrease by 3.3 units and 1.0 respectively, given the other variables are held constant. It means changes in the political socio-cultural awareness (PSA) the less likely to worsen and same quality of life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) and 10 percent ( $p < 0.10$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between political socio-cultural awareness (PSA) and women's quality of life and provides strong evidence in support of the quality of life theory III.

The finding depicts that as the more favorable participation of women in Pakistan is constrained by their lack of skill, education and training beside political socio-cultural norms. Furthermore, poor women have to bear double burden of unpaid household workload and little bit paid workload. Simultaneously, it is also believed that women enjoy a sense of independence and self-confidence regarding political social-cultural awareness (PSA). Hence, the higher the political socio-cultural awareness (PSA) the

better the quality of life of women borrowers. Thus, the finding is supported by earlier studies such as Bano, (2009); Haq and Khalid (2011); Isran and Isran (2012); Naz and Ahmad (2012); Jafree and Ahmad, (2013) and Bhattacharya (2014).

**Age (AGE):** As seen in the Table 4.11, results obtained of the parameters of model 2, from the multinomial logit model estimates in respect of age (AGE) indicates that for an every unit increase in years of age (AGE), the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to increase by 0.7 units and 0.7 respectively, relative to improve quality of life, found to be positive and significant at 5 percent ( $p < 0.05$ ), given the other variables are held constant. It means that the more the age (AGE), the more likely to be worsen as well as same quality of life as compare to base category improve quality of life based on positive parameter established. The positive coefficient contradicts the prediction of the quality of life theory III. Thus, this study creates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between age (AGE) and women's quality of life is thereby supported. This finding is in line with the previous researches such as Jafree and Ahmad (2013); Charansarn, (2014); Ali, Ali & Subhan, (2015).

**Education (EDU):** In model 2, apart from the variables discussed above Table 4.11 results obtained of the parameters from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of worsen quality of life relative to improve quality of life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same quality of life

of model 2, from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of same quality of life would be expected to increase by 0.4 units at 5 percent ( $p < 0.05$ ), respectively, relative to improve quality of life, found to be significantly positive in the model 2, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between education (EDU) and women's quality of life is thereby supported. This finding is consistent with the previous researches such as Farah (2002) and Charansarn (2014).

**Family Size (FS):** In accordance with expected prediction, that the both coefficients of (FS) of model 2, from the multinomial logit model estimated that for one unit increase in number of family size (FS) the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to decrease by 1.4 unit and 0.8 respectively, relative to improve quality of life, found to be negatively significant, at 1 percent ( $p < 0.01$ ), 5 percent ( $p < 0.05$ ) respectively, given the other variables are held constant. It means that the more the family size (FS), the less likely to be worsen as well as same quality of life as compare to base category improve quality of life based on negative parameter established and provides strong evidence in support of the quality of life theory III. Therefore the alternative hypothesis which proposed there is relationship between family size (FS) and women quality of life is thereby supported. The present study finding is consistent with the previous studies such as Parveen (2007); Bandyopadhyay *et al.*, (2011).



**Marital Status (MS):** In the model 2 of Table 4.11 the multinomial logit estimate for a change in marital status (MS) of the respondents the multinomial log-odds for preferring in case of worsen quality of life than to improve, respectively, found to be insignificant given the other variables are held constant. In contrast, in case of the same quality of life, it would be more likely to decrease 1.5 relative to improve quality of life found to be natively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between marital status (MS) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's quality of life and provides strong evidence in support of the quality of life theory III. The present study is in line with the previous studies such as Becchetti (2010); Bandyopahyay, *et al.*, (2011); Nabahat (2014).

**Personal Annual Income (PAI):** As seen in the Table 4.11, results obtained of the parameters of the Model 2, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that for an every unit increase in amount of personal annual income (PAI) the multinomial log-odds for preferring in both cases worsen quality of life and same quality of life would be expected to decrease by 1.0 units and 1.1 respectively, relative to improve quality of life. It means that the more the personal annual income (PAI) the less likely to worsen and same quality of life than to improve, based on negative and significant at 1 percent ( $p < 0.01$ ) parameter established. Hence the more the personal annual income (PAI) the better the quality of life, given the other variables is held constant.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women's quality of life. Therefore the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women's quality of life in support of the quality of life theory III. The finding of the present study is supported by many previous researches such as Azid, Ejaz and Alamas (2010); Ali, Ali and Subhan (2015).

#### **4.8.3.2 The Marginal effect Estimates**

As above mentioned in detail in previous model 1, that marginal effects are complementary to the multinomial logit regression estimates as it relates the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. For categorical variables with more than two discrete choices, the marginal effect reveals the difference in predicting probabilities for each comparison category relative to the base category (Cameron & Trivedi, 2009). Thus, the marginal effects of model 2 are as follows below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS), economic decision making (EDM), political socio-cultural awareness (PSA), education (EDU), marital status (MS) and personal annual income (PAI) found to be significant while freedom of movement (FOM), age (AGE) and family size (FS), were insignificant correspondingly.

***Loan Duration (LD):*** Moreover the marginal effects illustrated that as one unit increase in loan duration (LD) then the probability of worsen quality of life relative to improve quality of life will decrease by 1 percent found to be significant, in model 2, ceteris

paribus. This means that increase in the loan duration improves the quality of life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan duration (LD) then the probability of same quality of life relative to improve quality of life will increase significantly by 3 percent keeping all other variables remain constant. This means that increase in the loan duration improves the quality of life of women borrowers of Pakistan. This means that loan duration (LD) has no effect on quality of life of women borrowers of Pakistan.

**Training (T):** Similarly, the marginal effects illustrated that as one unit increase in training (T) then the probability of worsen quality of life relative to improve quality of life is insignificant in model 2, ceteris paribus. On the contrary, the marginal effects illustrated that as one unit increase in training (T) then the probability of same quality of life relative to improve quality of life will decrease by 5 percent found to be significant in model 1, holding all other variables remain constant. This means that increase in the training (T) improves the quality of life of women borrowers of Pakistan.

**Loan Size (LS):** Further the marginal effects showed that as one unit increase in loan size (LS) then the probability of the case of worsen quality of life relative to improve quality of life will decrease significantly by 13 percent and same quality of life insignificant respectively in model 2, ceteris paribus. This means that increase in the loan size (LS) improves the quality of life of women borrowers of Pakistan.

**Economic Decision Making (EDM):** Moreover the marginal effects illustrated that as one unit increase in economic decision making (EDM) then the probability of worsen quality of life relative to improve quality of life found to be insignificant, in model 2 ceteris paribus. On the other hand, the marginal effects portrayed that as one unit increase in economic decision making (EDM) then the probability of same quality of life relative to improve quality of life will increase by 12 percent but highly significant in model 2. However, holding all other variables remains constant vice versa. This means that economic decision making (EDM) has no effect on quality of life of women borrowers of Pakistan.

**Freedom of Movement (FOM):** Similarly, the marginal effects illustrated that as one unit increase in freedom of movement (FOM) then the probability of worsen and same quality of life relative to improve quality of life is insignificant in model 2, ceteris paribus.

**Political Socio-cultural Awareness (PSA):** Moreover, the marginal effects illustrated that as one unit increase in political socio-cultural awareness (PSA) then the probability of worsen quality of life relative to improve quality of life will decrease by 27 percent found to be highly significant, in model 2 ceteris paribus. This means that increase in the political socio-cultural awareness (PSA) improves the quality of life of women borrowers of Pakistan.

Instead, the marginal effects portrayed that as one unit increase in political socio-cultural awareness (PSA) then the probability of same quality of life relative to improve quality of life will increase by 17 percent but highly significant in model 2. However,

keeping all other variables remains constant vice versa. This means that increase in the political socio-cultural awareness (PSA) have no effect on the quality of life of women borrowers of Pakistan.

**Age (AGE):** Moreover the marginal effects illustrated that as one unit increase in age (AGE) the probability of both cases worsen and same quality of life relative to improve quality of life is insignificant in model 2, even though holding all other variables remain constant.

**Education (EDU):** Similarly, the marginal effects described that as one unit increase in education (EDU) then the probability of worsen quality of life relative to improve quality of life will decrease by 5.4 percent found to be significant in model 2, ceteris paribus. This means that increase in education (EDU) improves the quality of life of women borrowers of Pakistan.

On the other hand, the marginal effects revealed that as one unit increase in education (EDU) then the probability of the same quality of life relative to improve quality of life will increase by 8.3 percent highly significant in model 2, even though remaining all other variables held constant. This means that increase in education (EDU) have no effect on the quality of life of women borrowers of Pakistan.

**Family Size (FS):** Likewise the marginal effects illustrated that as one unit increase in family size (FS) then the probability of both cases worsen and same quality of life relative to improve quality of life is insignificant respectively in model 2, ceteris paribus.

**Marital Status (MS):** In addition the marginal effects illustrated that as marital status (MS) changes the probability of worsen quality of life relative to improve quality of life will rise 11.2 percent, found to be significant in model 2, even however keeping all other variables remain constant. This means that even with the changes in marital status (MS) have no effect on the quality of life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit change in marital status (MS) then the probability of the same quality of life relative to improve quality of life will decrease by 21.5 percent significantly in model 2, ceteris paribus. This means that change in marital status (MS) improves the quality of life of women borrowers of Pakistan.

**Personal Annual Income (PAI):** With negative marginal effect illustrated that a 1 percent increase in personal annual income (PAI) then the probability of worsen quality of life relative to improve is insignificant ceteris paribus. Similarly, in another case the highest marginal effect showed that a 1 percent increase in personal annual income (PAI) then the probability of the same quality of life relative to improve quality of life will decrease 7 percent found to be significant, in model 2, even though persisting all other variables remain constant. This means that increase in personal annual income (PAI) improves the quality of life of women borrowers of Pakistan.

#### **4.8.3.3 Odds Ratio Estimates**

Odds are the ratio of probability of an event occurring to the probability of the event not occurring (Gujarati, 2004). An odds ratio greater than 1 corresponds to a positive

logit coefficient while the odds ratio of less than one corresponds to a negative logit coefficient.

**Loan Duration (LD):** Similarly, the Table 4.11 shows that if loan duration (LD) increases by one point, the odds of preferring in the case of worsen quality of life relative to improve is insignificant. In contrast same quality of life would be expected to increases 4.6 units in that order of relative to improve quality of life in model 2.

**Training (T):** Moreover, in model 2 the Table 4.11 describes that if training (T) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.4 and 0.4 units in turn of relative to improve quality of life.

**Loan Size (LS):** Further in model 2 the Table 4.11 explains that if loan size (LS) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.1 and 0.4 units in that order of relative to improve quality of life.

**Economic Decision Making (EDM):** Moreover, in case of economic decision making (EDM) of model 2 is explained in Table 4.11 that economic decision making (EDM) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to increase 4.6 and 5.5 units in that order of relative to improve quality of life.

**Freedom of Movement (FOM):** Additionally, in model 2 the Table 4.11 explains that if Freedom of movement (FOM) increase by one point, the odds of preferring in the case of worsen quality of life is insignificant. While in same quality of life, it would be expected to decrease 0.2units in that order of relative to improve quality of life.

**Political Socio-cultural Awareness (PSA):** Moreover, in model 2 the Table 4.11 defines that if political socio-cultural awareness (PSA) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.03 and 0.3 units in turn of relative to improve quality of life.

**Age (AGE):** In chorus from the Table 4.11 demonstrates that if the age (AGE) increases by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to increase by 2.1 and 2.0 units respectively of relative to improve quality of life in model 2.

**Education (EDU):** Similarly, in model 2 the Table 4.11 indicates that if education (EDU) increases by one point, the odds of preferring in worsen quality of life found to be insignificant. On the other hand, education (EDU) increase by one point, the odds of preferring same quality of life would be expected to increase by 1.5 units of relative to improve quality of life.

**Family Size (FS):** Likewise, the Table 4.11 shows that if family size (FS) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.2 and 0.4 units correspondingly of relative to improve quality of life in model 2.



**Marital Status (MS):** Moreover, in model 2 the Table 4.11 point out that if marital status (MS) changes, the odds of preferring in the case of worsen quality of life is found to be significant. In contrast, the same quality of life would be expected to decrease 0.2 units consistently of relative to improve quality of life.

**Personal Annual Income (PAI):** In the same way, in concert from the Table 4.11 illustrates that personal annual income (PAI) increase by one point, the odds of preferring in both cases worsen quality of life and same quality of life would be expected to decrease 0.3 and 0.3 units respectively of relative to improve quality of life in model 2.

#### **4.8.3.4 Multinomial Probit Model Estimates**

The robustness is necessary to measure the key findings model. Thus, it is expected that the main conclusions as derived from the signs and significance level of key variable(s) should hold even when the variables are subjected to different model specification. Thus, an alternative measure of quality of life is applied to robustness check. To verify the results are robust, it also estimated by using the multinomial probit model. Table 4.11 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** Respectively, the result of the variable loan duration (LD) in model 2 confirms our findings. The coefficients marked very strong similarity with the assessed results in the case of worsen quality of life as compared to base category improve quality of life is found to be insignificant. Similarly, the same quality of life as compare to base category improve quality of life found to be significantly positive.

In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 2.

**Training (T):** Similarly, an estimation of the variable training (T) in model 2 the coefficients signified the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Hence, forth the results highlighted that all the results are consistent with the results of the multinomial logit model 2.

**Loan Size (LS):** An assessment of the variable loan size (LS) in model 2 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 2.

**Economic Decision Making (EDM):** Therefore in model 2 the Table 4.11, variable economic decision making (EDM) the coefficients indicated the very strong similarity with the assessed results in both cases worsen and same quality of life as compared with improve quality of life as base, found to be significantly positive. Hence the results are consistent with the results of multinomial logit model 2.

**Freedom of Movement (FOM):** Therefore in model 2 the Table 4.11, variable freedom of movement (FOM) the coefficients indicated the very strong similarity with the assessed results in case of worsen quality of life as compared with improved quality of life as base, found to be insignificantly negative. On the other side, variable freedom of

movement (FOM) the coefficients indicated the very strong similarity with the assessed results in the same quality of life as compared to improve as base, found to be significantly negative. Hence the results are consistent with the results of multinomial logit model 2.

***Political Socio-cultural Awareness (PSA):*** Therefore in model 2 the Table 4.11, variable political socio-cultural awareness (PSA) the coefficients indicated the very strong similarity with the assessed results in case of worsen quality of life as compared with improved quality of life as base, found to be significantly negative. On the other side, variable political socio-cultural awareness (PSA) the coefficients indicated slight difference can be attributed to the assessed results in same quality of life as compared to improve as base, found to be insignificantly negative. Hence the results are somehow consistent with the results of multinomial logit model 2.

***Age (AGE):*** Therefore in model 2 the Table 4.11, variable age (AGE) the coefficients indicated the very strong similarity with the assessed results in case of worsen quality of life as compared with improve quality of life as base, found to be significantly positive. In contrast, variable age (AGE) the coefficients indicated slight difference under outcome category same quality of life as compared with improve quality of life as base, found to be significantly negative. Hence the results are consistent with the results of multinomial logit model 2.

***Education (EDU):*** In the estimated results of the variable education (EDU) showed the high robust similarity with the evaluated results in worsen quality of life. It determines that might be having the education (EDU) the lesser for worsen quality of life as

compare to base category improve quality of life insignificantly negative. In contrast, the estimates of education (EDU) depicted that in the same quality of life found to be positively significant. Henceforth the results are in line with the results of multinomial logit model 2.

***Family Size (FS):*** Accordingly, an evaluation of the variable family size (FS) in model 2 the coefficients indicated the very strong similarity with the assessed results in both cases worsen and same quality of life as compared to base category improve quality of life found to be significantly negative. Hence forward the results point out that all the results are reliable with the results of the multinomial logit model 2.

***Marital Status (MS):*** Consequently, an assessment of the variable marital status (MS) in the model 2 the coefficients specified the high robust similarity with the evaluated results in both cases worsen and same quality of life as compared to improve quality of life as base, found to be negatively significant. Therefore, the results point out that all the results are consistent with the results of the multinomial logit model 2.

***Personal Annual Income (PAI):*** In view of personal annual income (PAI) in model 2 the coefficients signposted the very strong similarity with the assessed results in both cases worsen and same quality of life as compare to base category improve quality of life found to be significantly negative. Henceforth the results highlighted that all the results are consistent with the results of the multinomial logit model 2.

Hence, in conclusion, it is evident from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be

significant in explaining quality of life of the women borrowers of Pakistan. While the findings of the dimensions of personal empowerment have also a significant relationship with quality of life. Moreover, in case of demographic variable age, education, family size, marital status and personal annual income have a significant relationship with quality of life.

Thus, the findings of the study revealed that the significant relationship between dimensions of personal empowerment and quality of life is the main determining factor of quality of life. Therefore, it is clear from the findings that in order to improve quality of life of women borrowers of Pakistan it should not be focused only on microcredit but dimensions of personal empowerment, must be coming together with microcredit. Dimensions of personal empowerment leads to personal growth of women borrowers of Pakistan that will further effects quality of life. So. It is evident from the result of the study that not only microcredit played important role in improving quality of life but dimensions of personal empowerment has also an important determinant of quality of life. Now, the current study additionally studied the impact of the aggregate of the personal empowerment with health life improvement, which are as follows.

#### **4.9 Effect of Microcredit and Aggregate of Personal Empowerment (PEagg) on Health Life Improvement (Model 3)**

The current research analyzed the effect of Microcredit (LD, T, LS) and Aggregate personal empowerment (PEagg) on health life improvement (HLI) in model 3 respectively. The multinomial logit model was used to examine the effect of age (AGE), education (EDU), marital status (MS), family size (FS), personal annual income (PAI), loan duration (LD), training (T), loan size (LS) and aggregate of personal empowerment

(PEAgg) on women borrower’s health life improvement (HLI). Later, the results discuss to determine whether the results are robust to different estimation multinomial probit model.

#### 4.9.1 Tests for Model Fit (Model 3)

The results of model fit tests are reported in Table 4.12, which shows the “tests for goodness of fit” model 3.

Table 4.12  
*Tests for Goodness of Fit (Model 3)*

Tests	Results (Model 3)
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.2319
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 180.16 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.12 shows that the Wald chi-square test statistic of 106.75 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.12, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### 4.9.2 Test for Model Specification (Model 3)

The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. Hausman- McFadden specification test has been used to see if the model meets the independent irrelevant alternative (IIA) assumption. The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. The null hypothesis tested here states that the odds between a pair of alternatives are independent of the remaining alternatives. A significant test is evidence against  $H_0$ . Furthermore, the selection of the base-outcome<sup>i</sup> is the outcome category “improve quality of life”. This is due to the fact the other two outcome categories (same health life and worsen health life) fall under the not improvement in the health life. Thus, “improve health life” is entirely distinct and considered appropriate as the base outcome.

Table 4.13  
*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model3)*

Full sample Model 3				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen HLI	5.701	10	0.840	For Ho
2 Same HLI	1426.902	10	0.000	Against Ho
3 Improved HLI	-57.892	10	1.000	For Ho

Source: “Survey, 2016 computed using STATA Version 13”.

The statistical evidence in Table 4.13 indicates the chi square of the “improved health life” has negative sign. On the base of the studies of Cheng and Long (2007) and McFadden and Zarembka (1974) the negative value of chi-square does not indicate a violation of independent irrelevant alternative (IIA) assumption. Thus, the evidence of the case 3 are for Ho and therefore fail to reject the null hypothesis. Therefore the three

<sup>i</sup> To choose any of the categories as the reference. From the viewpoint of overall statistical quality of prediction by the model, the choice is an arbitrary (Gujrati, 2009)

outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.9.3 The Impact of Microcredit (MC) and Aggregate Personal empowerment (PEagg) on Health Life Improvement (Model 3)**

The model 3 evaluated the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on health life improvement (HLI) on poor women borrowers of Pakistan. It is concerned about how the predictor variables of these health life improvement (HLI) choices have changed with the concept that women might have altered their approaches through different possible options in response to their poor health life improvement (HLI). Thus the coefficients indicate the influence of each explanatory variable on the different health life improvement (HLI) choices in relation to the base outcome. Hence the coefficients estimate the likelihood of different health life improvement (HLI) options.

The fourth research objective of the present study is that microcredit (MC) and aggregate personal empowerment (PEagg) have an impact on women borrowers' health life improvement (HLI). Thus the multinomial logit model was used to check this effect. Moreover, the study also debates the estimation results of the marginal effect, odds ratios and multinomial probit model to ascertain whether the results are robust to different estimation multinomial probit model. The estimated results of the multinomial logistic regression are presented in Table 4.14.



Table 4.14

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Health Life Improvement (Full Sample of Model 3)*

Health Life Improvement (Model 3)										
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen HLI</i>		<i>Same HLI</i>		<i>Worsen HLI</i>		<i>Same HLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	2.705	-	5.716***	-	14.96	1.06	303.73	2.93	1.935	4.066***
LD	-0.404	-0.611	0.0785	0.527	0.667	-0.91	1.081	0.23	-0.286	0.073
T	0.265	0.008	0.333	0.061	1.303	1.11	1.395	1.46	0.231	0.263
LS	-0.253	-0.007	-0.331	-0.062	0.776	-0.88	0.717	-1.58	-0.1885	-0.233
PEagg	-1.045**	0.127***	-3.289***	-0.736	0.351**	-2.10	0.372***	-7.38	-0.864	-2.515***
AGE	0.697**	0.004	1.103***	0.218***	2.009**	2.41	3.015***	4.46	0.493**	0.836***
EDU	0.347	-0.036	1.017***	0.225***	1.415	1.44	2.765***	4.62	0.247	0.790***
FS	0.424	-0.047	1.287***	0.287***	1.528	1.26	3.623***	3.65	0.282	1.038***
MS	-0.491	-0.011	-0.666***	-0.126**	0.611	-1.55	0.513***	-2.65	-0.254	-0.473**
PAI	-0.800***	0.036	-1.771***	-0.377***	0.449***	-2.88	0.170***	-6.58	-0.579***	-1.370***
	LR $\chi^2$ (18)	180.16	Log likelihood		-298.38406		Number of observations		400	
	Prob > chi <sup>2</sup>	0.0000	Pseudo R <sup>2</sup>		0.2319					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.

#### 4.9.3.1 Multinomial Logit Estimates

In the present study microcredit (MC) is measured in the form of loan duration (LD), loan size (LS) and training (T). Similarly, aggregate personal empowerment (PEagg) is measured as sum of all its dimensions to check the impact of all the above mentioned variables on the dimension of quality of life that is health life improvement (HLI). Now, the present study, discuss them one by one.

***Loan Duration (LD):*** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 3, from the multinomial logit model estimated that one unit increase in the months of loan duration (LD) the multinomial log-odds for preferring in both cases worsen and same health life relative to improve health life (HLI), found to be insignificant given the other variables are held constant. This means that there is no effect of loan duration (LD) increase on the both cases worsen and same health life as compared to improve health life as a base category. Which shows that as the loan duration (LD) of women borrowers of Pakistan increases, there should no effect on the worsen and same health life. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between loan duration (LD) and health life. Hence the coefficient contradicts the prediction of the quality of life theory III as tested by (Ventegodt, Merrick & Andersen, 2003).

The findings of loan duration (LD) advocates that there are some factors that played role in decreasing health life such as high interest rates, larger loans and economic constraints. These results are in line with Ali, Ali and Subhan, (2015); Jaffree and Ahmad (2013).

**Training (T):** In the model 3 of Table 4.14 the multinomial logit estimate for a one unit increase in the days of training (T) the multinomial log-odds for preferring in both cases worsen and same health life found to be insignificant given the other variables are held constant. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between training (T) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between training (T) and women's health life is rejected.

The reason behind this issue is that as women may get training how to generate income by training (T), but still they lack the support to spend on her health. The root cause is in Pakistani culture, it is learnt by the women that their family is a priority than themselves. So, even they get training (T), they did not train enough to spend on their own health, that's why there is no relation between training (T) and health life improvement (HLI). Training (T) can affect the health life improvement in such a way that how women borrowers can spend their money on their health life improvement.

**Loan Size (LS):** In model 3, of Table 4.14 the multinomial logit estimate for a one unit increase in the amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same health life, found to be insignificant given the other variables are held constant. It means changes in the loan size (LS) the less likely to worsen and same health life than to improve, based on parameter established. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between loan size (LS) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women's health life is not accepted. The reason behind the no relationship of loan size and health

life is that the insufficient loan size (LS) increases poverty and the women due to cultural and traditional factors is unable to spend money on her health and loan size (LS) did not put any improvement in health life. So, there is no relationship between loan size (LS) and health life improvement (HLI) of poor women.

***Aggregate Personal Empowerment (PEagg):*** The results obtained from the parameters of model 3, from the multinomial logit model estimates in respect of overall or aggregate personal empowerment (PEagg) indicates that one unit increase in the ability of aggregate personal empowerment (PEagg) the multinomial log-odds for preferring in both cases of worsen and same health life would be expected to decrease by 1.0 units and 3.2 units relative to improve health life. It means changes in the aggregate personal empowerment (PEagg) the less likely to worsen and same the health life than to improve, based on negatively significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ), parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between aggregate personal empowerment (PEagg) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between aggregate personal empowerment (PEagg) and women health life and proposes strong evidence in the prediction of the quality of life theory III.

This finding is supported by earlier studies. The finding of the study is consistent with the argument that it hypothesized that aggregate personal empowerment (PEagg) plays a vital role in the improvement of women borrowers quality of life. It brings power and control over decisions about their health. It increases their dignity and self-respect in the family as well as the community and they move independently in the society. Their

contribution in health life decision making also increases. Based on the results it may lead to improve the women borrowers' health life improvement (HLI). The findings of the present research are similar such as Clark (1988); Boyd (1999); Khan and Rehman, (2007); Oladipo (2009).

**Age (AGE):** The results obtained of the parameters of the model 3, from the multinomial logit model estimates in respect of AGE indicates that one unit increase in the year of age (AGE), the multinomial log-odds for preferring in both cases worsen and same health life would be expected to increase by 0.6 unit and 1.1 respectively, relative to health life improvement (HLI), found to be positive and significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ), parameter established given the other variables are held constant. It means that the more the age (AGE), the more likely to be worsen as well as same health life improvement (HLI) as compared to base category improve health life improvement (HLI) based on positive parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between age (AGE) and women's health life is accepted the positive coefficient contradicts the prediction of the quality of life theory III as tested by Ventegodt, Merrick and Andersen (2003). Hence it is proved that as the age increases improve health life decreases. Hence the findings are in line with (Flagg, 2014).

**Education (EDU):** In model 3, a part from the variables discussed above Table 4.14 results obtained of the parameters from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of worsen

health life relative to improve health life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same health life of Model 3, from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of same health life would be expected to increase by 1.0 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve health life (HLI), found to be significantly positive in the model 3, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between education (EDU) and women health life improvement (HLI) is thereby supported.

As it is evident from the above discussion that education has an impact on health life of the women. It is also important to emphasize to the extent that education effects on health occur as a result of impacts on features of the self, particularly self-concepts and attitudes. Thus, in order to improve health life of the women borrowers of Pakistan it should be important to give emphasis on their education (EDU). Hence the results are consistent with (Manchin, 2014).

**Family Size (FS):** In model 3, a part from the variables discussed above Table 4.14 results obtained of the parameters from the multinomial logit model estimates in respect of members of family size (FS) the multinomial log-odds for preferring in case of worsen health life relative to improve health life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same health life of

model 3, from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in case of same health life would be expected to increase by 1.2 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve health life, found to be significantly positive in the model 3, given the other variables are held constant.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between family size (FS) and women health life improvement (HLI) is thereby supported. As the family size increase the same health life increase. Thus, the findings are consistent with (Fatima, 2009).

**Marital Status (MS):** In model 3, a part from the variables discussed above Table 4.14 results obtained of the parameters from the multinomial logit model estimates in respect marital status (MS) of the respondents that the multinomial log-odds for preferring in case of worsen health life relative to improve health life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same health life of model 3, from the multinomial logit model estimates in respect difference of marital status (MS) the multinomial log-odds for preferring in case of same health life would be expected to decrease by 0.6 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve health life, found to be significantly negative in the model 3, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between marital status

(MS) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women health life improvement (HLI) is thereby supported.

The present finding illustrated that marital status (MS) has a relation with same health life. This indicates that due to marital differences, females faced barriers towards health. As Pakistan is a patriarchal society, in which the provider is always a male. So, far the present study, women are taking microcredit but they depend on their husbands in taking decisions about their health. Hence the results are in line with (Duflo & Banerjee, 2012).

**Personal Annual Income (PAI):** The results obtained from the parameters of model 3, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that a unit increase in the amount of personal annual income (PAI) the multinomial log-odds for preferring in both cases of worsen and same health life would be expected to decrease by 0.8 units and 1.7 units relative to improve health life (HLI). It means changes in the personal annual income (PAI) the less likely to worsen and same the health life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ), parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women's health life is accepted. Hence, it proposes strong evidence in the prediction of the quality of life theory III which shows that increase in personal annual income (PAI)



increases health life of women borrowers of Pakistan. This study is in line with the previous studies such as Avazalipour *et al.*, (2012); Ali, Ali and Subhan (2015).

#### **4.9.3.2 The Marginal effect Estimates**

The marginal effects are complementary to the multinomial logit regression estimates as it relates the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. Thus, the marginal effects estimates of model 3 are discussed below. So, in the marginal effects the variables aggregate personal empowerment (PEagg), age (AGE), education (EDU), family size (FS), marital status (MS) and personal annual income (PAI) found to be significant while loan duration (LD), training (T), loan size (LS), were insignificant correspondingly.

***Loan Duration (LD):*** Moreover the marginal effects illustrated that as one unit increase in the amount of loan duration (LD) then the probability of both worsen and same health life relative to improve health life found to be insignificant, in model 3, Keeping, all other variables constant.

***Training (T):*** Additionally the marginal effects demonstrated that as one unit increase in training (T) then the probability of both worsen and same health life relative to improve health life found to be insignificant, in model 3, *ceteris paribus*.

***Loan Size (LS):*** Furthermore the marginal effects explained that as one unit increase in loan size (LS) then the probability of both worsen and same health life relative to

improve health life found to be insignificant, in model 3, even though persisting all other variables remain constant.

***Aggregate Personal Empowerment (PEagg):*** Further the marginal effects showed that as one unit increase in the ability of aggregate personal empowerment (PEagg) then the probability of worsen quality of life relative to improve quality of life will increase significantly by 12.7 percent in model 3, ceteris paribus. This means that increase in the aggregate personal empowerment (PEagg) improves the health life of women borrowers of Pakistan.

***Age (AGE):*** Besides the marginal effects demonstrated that as one unit increase in age (AGE) then the probability in the case of same health life relative to improve health life will increase 21.8 percent found to be significant, in model 3, even though persisting all other variables remain constant. This means that age (AGE) has no effect on the improvement of health life of women borrowers of Pakistan.

***Education (EDU):*** In addition the marginal effects revealed that as one unit increase in education (EDU) then the probability in the case of same health life relative to improve health life will increase 22.5 percent found to be significant, in model 3, ceteris paribus. This means that education (EDU) has no effect on the improvement of health life of women borrowers of Pakistan.

***Family Size (FS):*** Moreover, the marginal effects revealed that as one unit increase in family size (FS) then the probability in the case of same health life relative to improve health life will increase 28.7 percent found to be significant, in model 3, Keeping, all

other variables constant. This means that family size (FS) has no effect on the improvement of health life of women borrowers of Pakistan.

**Marital Status (MS):** Further, the marginal effects revealed that as marital status (MS) changes the probability in the case of same health life relative to improve health life will decrease 12.6 percent found to be significant, in model 3, *ceteris paribus*. This means that even with the changes in the marital status (MS) improves the health life of women borrowers of Pakistan.

**Personal Annual Income (PAI):** Additionally, the marginal effects revealed that as one unit increase in personal annual income (PAI) then the probability in the case of same health life relative to improve health life will decrease 37.7 percent found to be significant, in model 3, even though persisting all other variables remain constant. This means that increase in the personal annual income (PAI) improves the health life of women borrowers of Pakistan.

#### **4.9.3.3 Odds Ratio Estimates**

The odds ratio presents an easier alternative to interpreting the estimates. Further, the odds ratio is considered to be more informative (Long & Freese, 2000). This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So in this the odd ratios of aggregate personal empowerment (PEagg), age (AGE), education (EDU), family size (FS), marital status

(MS) and personal annual income (PAI) found to be significant while loan duration (LD), training (T) and loan size (LS), were insignificant correspondingly.

**Loan Duration (LD):** Similarly, the Table 4.14 shows that if loan duration (LD) increase by one point, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 3.

**Training (T):** Likewise, the Table 4.14 shows that if training (T) increase by one point, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 3.

**Loan Size (LS):** Similarly, the Table 4.14 shows that if loan size (LS) increase by one point, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 3.

**Aggregate Personal Empowerment (PEagg):** Moreover, in model 3 the Table 4.14 defines that if aggregate personal empowerment (PEagg) increase by one point, the odds of preferring in both cases worsen health life and same health life would be expected to decrease 0.35 and 0.37 units in turn of relative to improve health life.

**Age (AGE):** In chorus from the Table 4.14 demonstrates that if the age (AGE) increases by one point, the odds of preferring in both cases worsen health life and same health life would be expected to increase by 2.0 and 3.0 units respectively relative to improve health life in model 3.

**Education (EDU):** Similarly, the Table 4.14 indicates that if education (EDU) increase by one point, the odds of preferring in the case same health life would be expected to increases 2.7 units in that order of relative to improve health life in model 3.

**Family Size (FS):** Correspondingly, the Table 4.14 indicates that if family size (FS) increase by one point, the odds of preferring in the case same health life would be expected to increases 3.6 units in that order of relative to improve health life in model 3.

**Marital Status (MS):** Consistently, the Table 4.14 indicates that if marital status (MS) changes, the odds of preferring in the case same health life would be expected to decrease 0.5 units in that order of relative to improve health life in model 3.

**Personal Annual Income (PAI):** Likewise, from the Table 4.14 reveals that if the personal annual income (PAI) increases by one point, the odds of preferring in both cases worsen health life and same health life would be expected to decrease by 0.4 and 0.1 units respectively relative to improve health life in model 3.

#### **4.9.3.4 Multinomial Probit Model Estimates**

To verify the results of the multinomial logit estimate robustness is checked, it also estimated by using the multinomial probit model. Table 4.14 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** Correspondingly, the result of the variable loan duration (LD) in model 3 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base

category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 3.

**Training (T):** Similarly, the result of the variable training (T) in model 3 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 3.

**Loan Size (LS):** Likewise, the result of the variable loan size (LS) in model 3 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compared to base category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 3.

**Aggregate Personal Empowerment (PEagg):** In the estimated results of the variable aggregate personal empowerment (PEagg) showed the slight difference with the evaluated results in worsen health life. In contrast, the estimates of aggregate personal empowerment (PEagge) depicted that there is a strong similarity under the category (2) in the same health life found to be negatively significant. Henceforth the results are in line with the results of multinomial logit model 3.

**Age (AGE):** Also, the result of the variable age (AGE) in model 3 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both

cases of worsen and same health life as compare to base category improve health life and found to be positively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 3.

**Education (EDU):** In the estimated results of the variable education (EDU) showed the strong similarity with the evaluated results in worsen health life. In contrast, the estimates of education (EDU) depicted that there is a strong robustness under the category (2) in the same health life found to be positively significant. Henceforth the results are in line with the results of multinomial logit model 3.

**Family Size (FS):** In the estimated results of the variable family size (FS) showed the strong similarity with the evaluated results in worsen health life. In contrast, the estimates of family size (FS) depicted that there is a strong robustness under the category (2) in the same health life found to be positively significant. Henceforth the results are consistent with the results of multinomial logit model 3.

**Marital Status (MS):** In the estimated results of the variable marital status (MS) showed the strong similarity with the evaluated results in worsen health life. In contrast, the estimates of marital status (MS) depicted that there is a strong robustness under the category (2) in the same health life found to be negatively significant. Henceforth the results are in line with the results of multinomial logit model 3.

**Personal Annual Income (PAI):** Also, the result of the variable personal annual income (PAI) in model 3 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as

compare to base category improve health life and found to be negatively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 3.

Henceforth, it is obvious from the above mentioned logit results that the findings of aggregate personal empowerment have a significant relationship with health life improvement. Therefore, it indicates the importance of aggregate personal empowerment in improving health life of women borrowers of Pakistan. Moreover, in case of demographic variable age, education, family size, marital status and personal annual income have a significant relationship with health life improvement. In contrast microcredit which is measured by loan duration, training and loan size are found to be insignificant in explaining quality of life of the women borrowers of Pakistan. Therefore, it is clear from the findings that in order to improve health life of women borrowers of Pakistan it should be focused on aggregate personal empowerment. Aggregate personal empowerment leads to personal growth of women borrowers of Pakistan that will further effects health life. Now the present-day exploration more studied the impact of the three dimensions of the aggregate personal empowerment with health life, which are as follows.

#### **4.10 Effect of Microcredit and Dimensions of Personal Empowerment on Health Life Improvement (Model 4)**

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of aggregate personal empowerment (EDM, FOM & PSA) on health life improvement in model 4 respectively. The multinomial logit model was used to examine the effect of loan duration (LD), training (T), loan size (LS), economic decision making (EDM),



freedom of movement (FOM), political social awareness (PSA). Later, we also discuss the estimation of results to determine whether our results are robust to different estimation multinomial probit model.

#### 4.10.1 Tests for Model Fit (Model 4)

The results of model fit tests are reported in Table 4.15, which shows the “tests for goodness of fit” model 4.

Table 4.15  
*Tests for Goodness of Fit (Model 4)*

Tests	Results
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.3902
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 303.18 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.15 shows that the Wald chi-square test statistic of 125.94 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.15, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is

not very high and not very low but it's considered good as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### **4.10.3 The Impact of Microcredit and Dimensions of Personal Empowerment on Health Life Improvement (Model 4)**

The table shows the estimate of model 4. In model 4 the study has evaluated the impact of loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM) and political social-cultural awareness (PSA) on health life improvement (HLI) of poor women borrowers.

The fourth objectives of the present scholarship are that microcredit (MC) and the three domains; economic decision making (EDM), freedom of movement (FOM) and political social-cultural awareness (PSA) of aggregate personal empowerment (PEagg) has an impact on women borrowers' health life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and to determine whether our results are robust to different estimation multinomial probit model. The results of the multinomial logistic regression are presented in Table 4.16.

Table 4.16

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Health Life Improvement (Full Sample of Model 4)*

		Health Life Improvement (Model 4)									
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model		
Independent Variable	<i>Worsen HLI</i>		<i>Same HLI</i>		<i>Worsen HLI</i>		<i>Same HLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>	
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff	
Cons	0.457	-	3.31	-	1.58	0.17	27.65	1.31	0.895	2.470	
LD	0.413	-0.060	1.036*	0.202*	1.511	0.74	2.818*	1.82	0.207	0.673	
T	0.191	0.104**	-0.548*	-0.159**	1.211	0.74	0.579*	-1.72	0.107	-0.272	
LS	-0.218	0.012	-0.394	-0.069	0.804	-0.56	0.673	-1.05	-0.172	-0.325	
EDM	2.300***	0.119	2.239***	0.254**	9.976***	3.53	9.389***	3.63	1.719***	1.873***	
FOM	-0.056	0.033	-0.340	-0.076	0.945	-0.08	0.711	-0.56	-0.026	-0.232	
PSA	-2.961***	0.223**	-5.806***	-0.148***	0.051***	-4.22	0.003***	-8.07	-2.354***	-4.385***	
AGE	0.788**	-0.085	1.745***	0.328***	2.199**	2.19	5.724***	4.19	0.601**	1.226***	
EDU	0.727**	-0.142**	2.105***	0.425***	2.070**	2.58	8.209***	5.19	0.542***	1.460***	
FS	0.470	-0.235**	2.464***	0.546***	1.601	1.30	11.75***	4.14	0.316	1.663***	
MS	0.059	0.037	-0.204	-0.058	1.061	0.12	0.815	-0.37	0.111	-0.027	
PAI	-1.482***	0.140**	-3.12***	-0.578***	0.227***	-4.58	0.043***	-6.56	-1.107***	-2.217***	
LR $\chi^2$ (22)	303.18		Log likelihood		-236.87236		Number of observations		400		
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.3902						

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome

#### 4.10.3.1 Multinomial Logit Estimates

In the present study microcredit (MC) is measured in the form of loan duration (LD), loan size (LS) and training (T). Similarly, aggregate personal empowerment (PEagg) is measured on the basis of its dimensions to check the impact of all the above mentioned variables on the dimension of quality of life that is health life improvement (HLI). Now, the present study, discuss them one by one.

**Loan Duration (LD):** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 4, the multinomial logit model estimated that one unit increase in the months of loan duration (LD) the multinomial log-odds for preferring in case of worsen health life relative to improve health life, found to be positively insignificant given the other variables are held constant. In contrast, in case of the same health life, it would be more likely to increase 1.5 relative to improve health life found to be positively significant at 10 percent ( $p < 0.10$ ), given the other variables are held constant. This means as the loan duration (LD) increases the same health life as compared to improve health life as a base category also rises. This shows that as the loan duration (LD) of women borrowers of Pakistan increases their same health life also increases.

The finding concluded that health life has relation with same health life, which shows that the loan duration (LD) is not playing a role in improving health life. There are many reasons for this phenomenon such as inflation, interest rate, economic constraints, illness may leads to loss of earnings which may affect the entire household and long duration of loan leads towards the failure of repayments All these factors shows that why women heath life not improve when they have credit for long time.

Thus, this study found sufficient evidence to reject the null hypothesis which postulate that there is no relationship between loan duration (LD) and women's health life. Thus the significance of same health life contradicts the prediction of the quality of life theory III. Thus, this focused that loan duration (LD) of women borrowers positively increase the improve health life. In this case it contradicts with this concept. Hence the findings are against with Hamad and Fernald, (2015).

**Training (T):** In the model 4 of Table 4.16 the multinomial logit estimate for a one unit increase in the days training (T) the multinomial log-odds for preferring in the case of worsen health life found to be insignificant given the other variables are held constant. In contrast, in the case of same health life it would be less likely to decrease 0.5 relative to improve health life found to be negatively significant at 10 percent ( $p < 0.10$ ), given the other variables are held constant. This means as the training (T) increases the same health life decreases. This finding is in line with the previous researches such as Forster, Greene and Pytkowska (2003); Mohindra, Haddad and Narayana (2008); Daley-Harris, (2009). Thus, this study found sufficient evidence to accept the alternative hypothesis which proposed there is a relationship between training (T) and women's health life is accepted. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training (T) and improve quality of life.

**Loan Size (LS):** In model 4, of Table 4.16 the multinomial logit estimate for a one unit increase in the amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same health life, found to be insignificant given the other variables are held constant. It means changes in the loan size (LS) the less likely to worsen and

same health life than to improve, based on parameter established. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between loan size (LS) and women's health life. Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women's health life is not accepted. The reason behind the no relationship of loan size (LS) and health life is that the small loan size increases poverty and the women due to cultural and traditional factors is unable to spend money on her health and loan size (LS) did not put any improvement in health life. So, there is no relationship between loan size (LS) and health life improvement (HLI) of poor women.

***Economic Decision Making (EDM):*** As seen in the Table 4.16, results obtained of the parameters of Model 4, from the multinomial logit model estimates for a one unit increase in the ability of economic decision making (EDM) the multinomial log-odds for preferring in both cases worsen health life and same health life would be expected to increase 2.3 and 2.2 relative to improve health life respectively, found to be positively significant at 1 percent ( $p < 0.01$ ) respectively given the other variables are held constant. It shows an increase in the economic decision making (EDM) the most likely to increase in both worsen and same health life than to improve, based on positive and significant parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between economic decision making (EDM) and women's health life. Thus the coefficient contradicts the prediction of the quality of life theory III.

Hence, the above results showed that as the women economic decision making (EDM) increases, there worsen and same health life also increases. The logic behind is that

economic decision making (EDM) helps woman to taking decision economically, but the health of woman is far behind as she supposed to focus on other matters of life on priority as compare to her own health. This is the main cause why women same and worsen health life increases with the increase in economic decision making of women.

**Freedom of Movement (FOM):** In model 4, of Table 4.16 the multinomial logit estimate for a one unit increase in the ability of freedom of movement (FOM) the multinomial log-odds for preferring in both cases worsen and same health life, found to be insignificant given the other variables are held constant. It means changes in the freedom of movement (FOM) the less likely to worsen and same health life than to improve, based on parameter established. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between freedom of movement (FOM) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between freedom of movement (FOM) and women's health life improvement (HLI) is not accepted.

The main reason is that women in Pakistan have limited mobility towards health centers. The overall two-thirds of women require someone's permission to visit health centers in the village. They are restricted to go to health centers as mentioned in a report by Hakim and Cleland (1998) that about a quarter of women could go to health centers and hospital or clinic unescorted. Therefore, freedom of movement (FOM) have no effect on health life of women because of these rigid factors of the society. This finding is consistent with other previous researches such as Sathar and Kazi, (1997); Ali and Haq (2006).

***Political Socio-cultural Awareness (PSA):*** In the model 4 of Table 4.16 the multinomial logit estimate for a one unit increase in political socio-cultural awareness (PSA) the multinomial log-odds for preferring in both cases worsen and same health life improvement(HLI) would be expected to decrease by 2.9 units and 5.8 respectively, given the other variables are held constant. It means changes in the political socio-cultural awareness (PSA) the less likely to worsen and same health life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women's health life improvement (HLI).

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women's health life improvement (HLI). Thus the coefficient contradicts the prediction of the quality of life theory III. Therefore the alternative hypothesis which proposed there is a relationship between political socio-cultural awareness (PSA) and women health life improvement (HLI) and provides strong evidence in support of the quality of life theory III. Hence, the higher the political socio-cultural awareness (PSA) the better the health life of women borrowers. Because, as political socio-cultural awareness (PSA) increases woman become more aware towards her rights and better understand the importance of health in her life. Thus, the finding is supported by earlier studies such as Haq and Khalid (2011); Isran and Isran (2012) Naz and Ahmad (2012); Jafree and Ahmad, (2013); Yusuf, (2013); Bhattacharya, (2014).



**Age (AGE):** The results obtained of the parameters of the model 4, from the multinomial logit model estimates in respect of age (AGE) indicates that one unit increase in the year of age (AGE), the multinomial log-odds for preferring in both cases worsen and same health life improvement (HLI) would be expected to increase by 0.7 unit and 1.7 respectively, relative to health life improvement, found to be positive and significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ), parameter established given the other variables are held constant. It means that the more the age (AGE), the more likely to be worsen as well as same health life improvement (HLI) as compare to base category improve health life improvement based on positive parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's health life improvement (HLI). The positive coefficient contradicts the prediction of the quality of life theory III as tested by Ventegodt, Merrick and Andersen, (2003).

**Education (EDU):** The results obtained of the parameters of the model 4, from the multinomial logit model estimates in respect of education (EDU) indicates that for an every one unit increase in years of education (EDU), the multinomial log-odds for preferring in both cases worsen and same health life improvement (HLI) would be expected to increase by 0.7 unit and 2.1 respectively, relative to health life improvement, found to be positive and significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ), parameter established given the other variables are held constant. It means that the more the education (EDU), the more likely to be worsen as well as same health life improvement(HLI) as compare to base category improve health life improvement (HLI) based on positive parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship

between education (EDU) and women health life improvement (HLI). The positive coefficient contradicts the prediction of the quality of life theory III as tested by Ventegodt, Merrick and Andersen (2003).

The Pakistan health system is the weakest system in south Asia, the achievement of health care is a main risk especially for women (Ahmad, 2014). From this it is evident that how educated the women is if the health system is not better than their worsen and same health life increases as compared to improve health life.

**Family Size (FS):** In model 4, apart from the variables discussed above Table 4.16 results obtained of the parameters from the multinomial logit model estimates in respect of the members of family size (FS) the multinomial log-odds for preferring in case of worsen health life improvement (HLI) relative to improve health life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same health life of model 4, from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in case of same health life would be expected to increase by 2.4 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve health life, found to be significantly positive in the model 3, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between family size (FS) and women health life improvement (HLI) is

thereby supported. As the family size increase the same health life remain constant. The reason is that the large family size changes the priorities and may focus on other needs as compared to health life. Small family size has improved health life as compared to large family size. Hence, the findings are in line with Flagg *et al.*, (2014).

**Marital Status (MS):** In model 4, of Table 4.16 the multinomial logit estimate for a change in the marital status (MS) of the respondents the multinomial log-odds for preferring in both cases worsen and same health life improvement(HLI), found to be insignificant given the other variables are held constant. It means that as marital status (MS) changes the less likely to worsen and same health life than to improve, based on parameter established. Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between marital status (MS) and women health life. Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's health life improvement (HLI) is not accepted. This finding showed the contradictory evidence in support of quality of life theory III.

**Personal Annual Income (PAI):** The results obtained from the parameters of model 4, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that for an one unit increase in the amount of personal annual income (PAI) the multinomial log-odds for preferring in both cases of worsen and same health life improvement (HLI) would be expected to decrease by 1.4 units and 3.1 units relative to improve health life. It means changes in the personal annual income (PAI) the less likely to worsen and same the health life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ), parameter established. Thus, this study found

sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women health life improvement (HLI). Therefore the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women's health life improvement (HLI) and proposes strong evidence in the prediction of the quality of life theory III. This study is in line with the previous studies such as Goey, (2012); Ali, Ali and Subhan (2015).

#### **4.10.3.2 Marginal effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. Thus, the marginal effects estimates of model 4 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), economic decision making (EDM), political socio-cultural awareness (PSA), age (AGE), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while loan size (LS), freedom of movement (FOM ) and marital status (MS) were insignificant correspondingly.

***Loan Duration (LD):*** Moreover, the marginal effects revealed that as one unit increase in loan duration (LD) then the probability in the case of same health life relative to improve health life will increase 2 percent found to be significant, in model 4, keeping, all other variables constant. This means that loan duration (LD) has no effect on the improvement of health life of women borrowers of Pakistan.

***Training (T):*** In addition the marginal effects illustrated that as one unit rise in training (T) then the probability of worsen health life relative to improve health life will rise

10.4 percent, found to be significant in model 4, even however keeping all other variables remain constant. This means that training (T) has no effect on the improvement of health life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in training (T) then the probability of the same health life relative to improve health life will decrease by 15.9 percent significantly in model 4, *ceteris paribus*. This means that increase in the training (T) improves the health life of women borrowers of Pakistan.

***Loan Size (LS):*** Moreover the marginal effects illustrated that as one unit increase in loan size (LS) then the probability of both worsen and same health life relative to improve health life found to be insignificant, in model 4, keeping, all other variables constant.

***Economic Decision Making (EDM):*** In addition the marginal effects revealed that as one unit increase in economic decision making (EDM) then the probability in the case of same health life relative to improve health life will increase 25.4 percent found to be significant, in model 4, *ceteris paribus*. This means that economic decision making (EDM) has no effect on the improvement of health life of women borrowers of Pakistan.

***Freedom of Movement (FOM):*** Moreover the marginal effects illustrated that as one unit increase in freedom of movement (FOM) then the probability of both worsen and same health life relative to improve health life found to be insignificant, in model 4, keeping, all other variables constant.

**Political Socio-cultural Awareness (PSA):** In addition the marginal effects illustrated that as one unit rise in political socio-cultural awareness (PSA) then the probability of worsen health life relative to improve health life will rise 22.3 percent, found to be significant in model 4, even however keeping all other variables remain constant. This means that political socio-cultural awareness (PSA) has no effect on the improvement of health life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in political socio-cultural awareness (PSA) then the probability of the same quality of life relative to improve quality of life will decrease by 10.4 percent significantly in model 4, ceteris paribus. This means that increase in the political socio-cultural awareness (PSA) improves the health life of women borrowers of Pakistan.

**Age (AGE):** In addition the marginal effects revealed that as one unit increase in years of age (AGE) then the probability in the case of same health life relative to improve health life will increase 32.8 percent found to be significant, in model 4, Keeping, all other variables constant. This means that age (AGE) has no effect on the improvement of health life of women borrowers of Pakistan.

**Education (EDU):** In addition the marginal effects illustrated that as one unit rise in years of education (EDU) then the probability of worsen health life relative to improve health life will decrease 14.2 percent, found to be significant in model 4, even however keeping all other variables remain constant. This means that increase in the years of education (EDU) improves the health life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in education (EDU) then the probability of the same quality of life relative to improve quality of life will by rise 42.5 percent significantly in model 4, *ceteris paribus*. This means that education (EDU) has no effect on the improvement of health life of women borrowers of Pakistan.

**Family Size (FS):** Similarly, the marginal effects illustrated that as one unit rise in members of family size (FS) then the probability of worsen health life relative to improve health life will decrease 23.5 percent, found to be significant in model 4, even however keeping all other variables remain constant. This means that increase in the members of family size (FS) improves the health life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in members of family size (FS) then the probability of the same quality of life relative to improve quality of life will by rise 54.6 percent significantly in model 4, Remaining all the variables constant. This means that family size (FS) has no effect on the improvement of health life of women borrowers of Pakistan.

**Marital Status (MS):** Moreover the marginal effects illustrated that as marital status (MS) of the respondents change the probability of both worsen and same health life relative to improve health life found to be insignificant, in model 4, Keeping, all other variables constant.

**Personal Annual Income (PAI):** In addition the marginal effects illustrated that as one unit rise in amount of personal annual income (PAI) then the probability of worsen health life relative to improve health life will rise 14.0 percent, found to be significant

in model 4, even however keeping all other variables remain constant. This means that personal annual income (PAI) has no effect on the improvement of health life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in personal annual income (PAI) then the probability of the same quality of life relative to improve quality of life will decrease by 57.8 percent significantly in model 4, *ceteris paribus*. This means that increase in the personal annual income (PAI) improves the health life of women borrowers of Pakistan.

#### **4.10.3.3 Odds Ratio Estimates**

The odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So, in this the odd ratios of loan duration (LD), training (T), economic decision making (EDM), political socio-cultural awareness (PSA), age AGE), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while and loan size (LS), freedom of movement (FOM) and marital status (MS) were insignificant correspondingly.

***Loan Duration (LD):*** The Table 4.16 indicates that if loan duration (LD) increase by one point, the odds of preferring in the case same health life would be expected to increases 2.8 units in that order of relative to improve health life in model 4.



**Training (T):** The Table 4.16 indicates that if training (T) increase by one point, the odds of preferring in the case same health life would be expected to decreases 0.5units in that order of relative to improve health life in model 4.

**Loan Size (LS):** Similarly, the Table 4.16 shows that if loan size (LS) increase by one point, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 4.

**Economic Decision Making (EDM):** Moreover, in model 4 the Table 4.16 defines that if economic decision making (EDM) increase by one point, the odds of preferring in both cases worsen health life and same health life would be expected to increase 9.9 and 9.3 units in turn of relative to improve health life.

**Freedom of Movement (FOM):** Similarly, the Table 4.16 shows that if freedom of movement (FOM) increase by one point, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 4.

**Political Socio-cultural Awareness (PSA):** In addition, in model 4 the Table 4.16 defines that if political socio-cultural awareness (PSA) increase by one point, the odds of preferring in both cases worsen health life and same health life would be expected to decrease 0.05 and 0.003 units in turn of relative to improve health life.

**Age (AGE):** Consequently, in model 4 the Table 4.16 defines that if age (AGE) increase by one point, the odds of preferring in both cases worsen health life and same health

life would be expected to increase 2.1 and 5.7 units in turn of relative to improve health life.

**Education (EDU):** Therefore, in model 4 the Table 4.16 defines that if education (EDU) increase by one point, the odds of preferring in both cases worsen health life and same health life would be expected to increase 2.0 and 8.2 units in turn of relative to improve health life.

**Family Size (FS):** The Table 4.16 indicates that if family size (FS) increase by one point, the odds of preferring in the case same health life would be expected to increases 11.7 units in that order of relative to improve health life in model 4.

**Marital Status (MS):** Similarly, the Table 4.16 shows that if marital status (MS) of respondents change, the odds of preferring in both cases worsen and same health life found to be insignificant relative to improve health life in model 4.

**Personal Annual Income (PAI):** In addition, in model 4 the Table 4.16 defines that if personal annual income (PAI) increase by one point, the odds of preferring in both cases worsen health life and same health life would be expected to decrease 0.2 and 0.04 units in turn of relative to improve health life.

#### **4.10.3.4 Multinomial Probit Model Estimates**

To verify the results of the multinomial logit estimate robustness is checked, it estimated by using the multinomial probit model. Table 4.16 showed the overall model that is statistically significant as the Prob >chi<sup>2</sup> = 0.0000.

**Loan Duration (LD):** Correspondingly, the result of the variable loan duration (LD) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the case of worsen health life as compare to base category improve health life and found to be insignificant. While in case of same health life as compare to base category improve health life there is a slight difference in the results. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Training (T):** Similarly, the result of the variable training (T) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the case of worsen health life as compare to base category improve health life and found to be insignificant. While in case of same health life as compare to base category improve health life there is a slight difference in the results. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Loan Size (LS):** Likewise, the result of the variable loan size (LS) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Economics Decision Making (EDM):** Also, the result of the variable economic decision making (EDM) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same

health life as compare to base category improve health life and found to be positively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

***Freedom of Movement (FOM):*** Similarly, the result of the variable freedom of movement (FOM) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

***Political Socio-cultural Awareness (PSA):*** Also, the result of the variable political socio-cultural awareness (PSA) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be negatively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

***Age (AGE):*** Furthermore, the result of the variable age (AGE) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be positively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Education (EDU):** Further, the result of the variable education (EDU) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be positively significant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Family Size (FS):** In the estimated results of the variable family size (FS) showed the strong similarity with the evaluated results in worsen health life. In contrast, the estimates of family size (FS) depicted that there is a strong robustness under the category (2) in the same health life found to be positively significant. Henceforth the results are consistent with the results of multinomial logit model 4.

**Marital Status (MS):** Similarly, the result of the variable marital status (MS) of respondents in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be insignificant. In view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

**Personal Annual Income (PAI):** Also, the result of the variable personal annual income (PAI) in model 4 confirms the findings. The coefficients marked very strong similarity with the assessed results in the both cases of worsen and same health life as compare to base category improve health life and found to be negatively significant. In

view of the results highlighted that all the results are consistent with the results of the multinomial logit model 4.

Therefore, it is clear from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining health life of the women borrowers of Pakistan. While the findings of the dimensions of personal empowerment, i.e. economic decision making and political socio-cultural awareness have also a significant relationship with health life. Moreover, in case of demographic variable age, education, family size, and personal annual income has significant relationship with health life. In contrast marital status is found to be insignificant.

Thus, it is clear from the results that the dimensions of personal empowerment leads to personal growth of women borrowers of Pakistan that will further effects health life. So. It is evident from the result of the study that not only microcredit played important role in improving health life but dimensions of personal empowerment has also an important determinant of health life. Now, the current study additionally studied the impact of the aggregate of the personal empowerment with health life improvement, which are as follows.

#### **4.11 Effect of Microcredit and Aggregate of Personal Empowerment (PEagg) on Economic Life Improvement (Model 5)**

The current research analyzed the effect of microcredit (LD, T, LS) and aggregate personal empower (PEagg) on economic life improvement (ELI) in model 5, by using the multinomial logit model. The study also examines the effect of age (AGE),

education (EDU), marital status (MS), family size (FS), personal annual income (PAI), loan duration (LD), training (T), loan size (LS) and aggregate of personal empowerment (PEagg) on women borrower's economic life improvement (ELI). Later, the results discuss to determine whether the results are robust to different estimation multinomial probit model.

#### 4.11.1 Test for Model Fit (Model 5)

The results of model fit tests are reported in Table 4.17, which shows the “tests for goodness of fit” model 5.

Table 4.17  
*Tests for Goodness of Fit (Model 5)*

Tests	Results
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.4088
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 303.55 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.17 shows that the Wald chi-square test statistic of 171.97 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.17, the

percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered good as it also falls within 50 percent and 100 percent suggested by Pampel, (2000) for predictive accuracy.

#### 4.11.2 Test for Model Specification (Model 5)

The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. Hausman - McFadden specification test has been used to see if the model meets the independent irrelevant alternative (IIA) assumption. The test is based on the concept that the choice probability of any two alternatives is not affected by the other alternatives. The null hypothesis tested here states that the odds between a pair of alternatives are independent of the remaining alternatives. A significant test is evidence against  $H_0$ . Furthermore, the selection of the base-outcome<sup>j</sup> is the outcome category “improve economic life”. This is due to the fact the other two outcome categories (same economic life and worsen economic life) fall under the not improvement in the economic life. Thus, “improve economic life” is entirely distinct and considered appropriate as the base outcome.

Table 4.18  
*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model5)*

<b>Full sample Model 5</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen ELI	2.163	10	0.995	For Ho
2 Same ELI	-7.126	10	1.000	For Ho
3 Improved ELI	148.719	10	0.000	Against Ho

Source: “Survey, 2016 computed using STATA Version 13”.

<sup>j</sup> To choose any of the categories as the reference. From the viewpoint of overall statistical quality of prediction by the model, the choice is an arbitrary (Gujrati, 2009)



The statistical evidence in Table 4.18 indicates the chi square of the “same economic life improvement” has negative sign. On the base of the studies of Cheng and Long (2007); McFadden and Zarembka, (1974) the negative value of chi-square does not indicate a violation of independent irrelevant alternative (IIA) assumption. Thus, the evidence of the case 2 are for  $H_0$  and therefore fail to reject the null hypothesis. Therefore the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.11.3 The Impact of Microcredit and Aggregate of Personal Empowerment (PEagg) on Economic Life Improvement (Model 5)**

In Model 5 the study has evaluated the impact of microcredit (MC) and aggregate personal empowerment (PEagg) on economic life improvement (ELI) of poor women borrowers. The fourth objective of the present scholarship is that microcredit (MC) and aggregate personal empowerment (PEagg) have an impact on women borrowers' economic life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

Table 4.19

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Economic Life Improvement (Full Sample of Model 5)*

		Economic Life Improvement (Model 5)								
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen ELI</i>		<i>Same ELI</i>		<i>Worsen ELI</i>		<i>Same ELI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	10.01***	-	16.15***	-	22.32**	2.41	1.03***	6.84	6.703***	12.13***
LD	-1.799***	-0.124***	-0.382	-0.337	0.165***	-3.68	0.681	-1.04	-1.146***	-0.198
T	0.723**	0.076***	-1.477***	-0.257***	2.061**	2.09	0.228***	-5.53	0.427**	-1.269***
LS	-1.219***	-0.068**	-1.210***	-0.180***	0.295***	-2.76	0.297***	-5.04	-0.771***	-0.870***
PEagg	-1.977***	-0.088*	-3.305***	-0.515***	0.138***	-3.08	0.036***	-6.37	-1.5648***	-2.2557***
AGE	0.106	-0.012	1.221***	0.200***	1.112	0.31	3.393***	4.07	0.161	0.958***
EDU	0.288	0.009	0.694**	0.110**	1.334	0.74	2.003**	2.35	0.133	0.659***
FS	-0.450	-0.027	-0.331	-0.047	0.637	-0.82	0.717	-0.82	-0.273	-0.090
MS	0.876**	0.067**	-0.227	-0.052	2.401**	2.32	0.796	-0.75	0.621**	-0.403*
PAI	-0.779**	-0.037	-0.141***	-0.176***	0.458**	-2.05	0.319***	-3.97	-0.524**	-1.064***
LR $\chi^2$ (18)	303.55		Log likelihood		-219.50965		Number of observations		400	
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.4088					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.

#### 4.11.3.1 Multinomial Logit Estimates

In the present study microcredit is measured in the form of loan duration (LD), loan size (LS) and training (T). Similarly, aggregate personal empowerment (PEagg) is measured as an aggregate of all its dimensions to check the impact of all the above mentioned variables on the dimension of quality of life that is an economic life improvement (ELI). Now, the present study, discuss them one by one.

**Loan Duration (LD):** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 5, the multinomial logit model estimated that for an unit increase in the months of the loan duration (LD) the multinomial log-odds for preferring in case of same economic life relative to improve economic life, found to be insignificant given the other variables are held constant. In contrast, in case of the worsen economic life, it would be less likely to decrease 1.7 relative to improve the economic life found to be negatively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant. This means as the loan duration (LD) increases worsen economic life as compared to improve economic life as a base category also decreases.

The finding evidenced that the loan duration (LD) has a relation with economic life improved as the loan duration increases worsen economic life improved decreases. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and economic life. Thus the result supports the prediction of the quality of life theory III. In this case it supports with this concept that increase in loan duration of women borrowers of Pakistan affects improvement in economic life. This finding is in line with the previous researches such

as Jaffery and Ahmed, (2013); Ali, Ali and Subhan (2015); Rudrabatla, Roy and Kumar (2015).

**Training (T):** In the model 5 of Table 4.19 the multinomial logit estimate for a one unit increase in days of training (T) the multinomial log-odds for preferring in the case of worsen economic life would be expected to increase by 0.7 unit given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their worsen economic life increases based on positively significant at 5 percent ( $p < 0.05$ ) parameter established. In contrast, in the case of same economic life would be expected to decrease by 1.4 unit given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their same economic life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established.

This means that as the training increases worsen economic life increases, while training (T) have a negative effect on same economic life relative to improve economic life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's economic life. Therefore the alternative hypothesis which proposed there is a relationship between training (T) and women's economic life is supported by many researches such as Karlan and Valdivia (2011); Valdivia (2013).

So, it is evident from the above mentioned results that as training (T) increases worsen economic life increases. Because, those women rather they got the training but they unable to impose on their economic life, due to their rigorous cultural conditions,

limited experience and role in economic activities. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen economic life and training (T). Consequently, in case of same economic life, training (T) has a negative effect, as the training (T) increases same economic life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training and improve economic life.

**Loan Size (LS):** In model 5, of Table 4.19 the multinomial logit estimate for a one unit increase in amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same economic life would be expected to decrease by 1.2 units and 1.2 respectively, given the other variables are held constant. It means changes in the amount of loan size (LS) the less likely to worsen and same economic life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women economic life. Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women economic life and postulates strong evidence as the expectation of the quality of life theory III.

Thus, a conceivable reason for the finding may be as loan size (LS) increases women, she became confident and financially stronger than the women who are not availing the loan size (LS). Based on the results, government and non-government agencies can increase women borrower's economic life through promoting the microcredit institutions. The results of the present research are alike with Al-Mamun, *et al.*, (2011); Al-Mamun, Adaikalam and Wahab (2012).

**Aggregate Personal Empowerment (PEagg):** The results obtained from the parameters of the model 5, from the multinomial logit model estimates in respect of overall or aggregate personal empowerment (PEagg) indicates that for an every one unit increase in the ability of aggregate personal empowerment (PEagg) the multinomial log-odds for preferring in both cases of worsen and same economic life would be expected to decrease by 1.9 units and 3.3 units relative to improve economic life. It means changes in the aggregate personal empowerment (PEagg) the less likely to worsen and same the economic life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ), parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between aggregate personal empowerment (PEagg) and women economic life. Therefore the alternative hypothesis which proposed there is a relationship between aggregate personal empowerment (PEagg) and women economic life is accepted and proposes strong evidence in the prediction of the quality of life theory III.

This finding is supported by earlier studies. The finding of the study is consistent with the argument that it hypothesized that aggregate personal empowerment (PEagg) plays a vital role in the improvement of women borrowers economic life. Further, it enables women to develop the necessary skills and confidence to access resources to achieve their aspirations. It brings power and control over their decisions. It increases their dignity and self-respect in the family as well as the community. They move independently in the society. Their contribution in economic life decision making also increases. Based on the results it may lead to improve the women borrowers' economic life improvement. The findings of the present research are similar such as Boyd (1999);

Cheung, Mok and Cheung (2005); Moyale, Dollard and Biswas (2006); Khan and Rehman (2007).

**Age (AGE):** In model 5, apart from the variables discussed above Table 4.19 results obtained of the parameters from the multinomial logit model estimates in respect of years of age (AGE) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of Model 5, from the multinomial logit model estimates in respect of years of age (AGE) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 1.2 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve economic life, found to be significantly positive in the model 4, given the other variables are held constant. This means that as the age (AGE) increases the same economic life also increases relative to improve economic life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between age (AGE) and women economic life improvement (ELI) is thereby supported. As it is evident from the above discussion that age has an impact on the economic life of the women. The results indicate that as the age increases same economic life increases. The main reason is that as the age (AGE) of the women of Pakistan increases their economic performance affected as compared to young energetic women, because as the age (AGE) increases women potential towards their

economic life decrease due to facing health crises. So, her economic life improvement (ELI) remains same with the increase in age.

**Education (EDU):** In model 5, apart from the variables discussed above Table 4.19 results obtained of the parameters from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of model 5, from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 0.6 units at 5 percent ( $p < 0.05$ ), respectively, relative to improve economic life, found to be significantly positive in the model 5, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between education (EDU) and women economic life improvement (ELI) is thereby supported. As it is evident from the above discussion that education has an impact on economic life improvement (ELI) of the women. But the results indicate that as the education (EDU) increases same economic life increases. The current study supported this fact that education has an impact on economic life improvement (ELI) of women, but it lies in the category of same economic life improvement relative to improve economic life. Thus the only 23 percent of women borrowers have the primary



education, 12 percent have the secondary education, 9 percent have higher secondary and only 5 percent of women borrowers have the degree education. They all have the same economic life improvement (ELI) relative to improve economic life. In Pakistani the rigid cultural conditions and norms are the barrier towards education of women. Therefore, even the women get admission in schools, but they leave the schools early in their life due to the pressure from family and financial constraints. That's why education puts an impact on economic life improvement (ELI), but it remains the same due to the stagnant or unchanged circumstances. Thus, it is also supported by Department for International Development (DFID), (2014).

**Family Size (FS):** In accordance with expected prediction, that the both coefficients of family size (FS) of model 5, from the multinomial logit model estimated that for an every unit increase in members of family size (FS) of the respondents the multinomial log-odds for preferring in both cases worsen economic life and same economic life found to be insignificant given the other variables are held constant.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between family size (FS) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between family size (FS) and women economic life improvement (ELI) is thereby not supported. It contradicts the quality of life theory III. Which emphasize that family size have an impact on an economic life improvement (ELI) of women borrowers of Pakistan.

**Marital Status (MS):** In the model 5 of Table 4.19 the multinomial logit estimate for the marital status (MS) the change in the marital status (MS) of the respondents the multinomial log-odds for preferring in the case of worsens economic life improvement (ELI) would be expected to increase by 0.8 unit given the other variables are held constant. It shows that as the difference in the marital status (MS) of women borrowers of Pakistan changes, their worsen economic life increases based on positively significant at 5 percent ( $p < 0.05$ ) parameter established. In contrast, in the case of same economic life would find to be insignificant. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between marital status (MS) and women's economic life. Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's economic life is supported by many researches such as Azid, Ejaz and Alamas, (2010); Anyanwu (2014). So, it is evident from the above mentioned results that as difference in marital status (MS) increases worsen economic life. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen economic life and marital status (MS). The change in marital status (MS) positively affects the economic life as women become stronger when she gets supports from her family and spouse.

**Personal Annual Income (PAI):** As seen in the Table 4.19, results obtained of the parameters of model 5, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that for an every one unit increase in personal annual income (PAI) the multinomial log-odds for preferring in both cases worsen economic life and same economic would be expected to decrease by 0.7 units and 0.1 respectively, relative to improve economic life. It means that the more the personal

annual income (PAI) the less likely to worsen and same economic life than to improve, based on negative and significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ) parameter established correspondingly. Hence the more the personal annual income (PAI) the better the economic life, given the other variables is held constant.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between the personal annual income (PAI) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between the personal annual income (PAI) and women economic life in support of the quality of life theory III. The findings concur with the view that might be as the women borrower's income improved their expenditures also improved. Thus, increased in personal income increases their economic life. This finding is in line with the previous researches such as Al-Mamun, Wahab and Malarvizhi (2010); Yousaf, Hassan and Makol (2013).

#### **4.11.3.2 The Marginal effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. The marginal effects of model 5 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PEagg), age (AGE), education (EDU), marital status (MS) and personal annual income (PAI) found to be significant while family size (FS) was insignificant correspondingly.

***Loan Duration (LD):*** More the marginal effects showed that as one unit increase in loan duration (LD) than the probability of the case of worsen economic life relative to

improve economic life will decrease significantly by 12.4 percent and same economic life insignificant respectively in model 5, ceteris paribus. This means that increase in the loan duration (LD) improves the economic life of women borrowers of Pakistan.

**Training (T):** In addition the marginal effects illustrated that as one unit rise in training (T) then the probability of worsen economic life relative to improve economic life will rise 0.76 percent, found to be significant in model 5, even however keeping all other variables remain constant. This means that training (T) has no effect on the improvement of economic life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in training (T) then the probability of the same economic life relative to improve economic life will decrease by 25.7 percent significantly in model 5, Keeping, all other variables constant. This means that increase in the training (T) improves the economic life of women borrowers of Pakistan.

**Loan Size (LS):** Further the marginal effects showed that as one unit increase in loan size (LS) then the probability of the cases of worsen and same economic life relative to improve economic life will decrease significantly by 6.8 percent and 18 percent respectively in model 5, ceteris paribus. This means that increase in the loan size (LS) improves the economic life of women borrowers of Pakistan.

**Aggregate Personal Empowerment (PEagg):** Additional, the marginal effects showed that as one unit increase in aggregate personal empowerment (PEagg) then the probability of the cases of worsen and same economic life relative to improve economic

life will decrease significantly by 8.8 percent and 51.5 percent respectively in model 5, keeping all the other variables remain constant vice versa. This means that increase in the aggregate personal empowerment (PEagg) improves the economic life of women borrowers of Pakistan.

**Age (AGE):** Moreover the marginal effects illustrated that as one unit increase in (AGE) then the probability of worsen economic life relative to improve economic life found to be insignificant, in model 5 ceteris paribus.

On the other hand, the marginal effects portrayed that as one unit increase in age (AGE) then the probability of same economic life relative to improve economic life will increase by 20 percent but highly significant in model 5. However, holding all other variables remains constant vice versa. This means that age (AGE) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Education (EDU):** Moreover the marginal effects illustrated that as one unit increase in education (EDU) then the probability of worsen economic life relative to improve economic life found to be insignificant, in model 5 ceteris paribus. On the other hand, the marginal effects portrayed that as one unit increase in education (EDU) then the probability of same economic life relative to improve economic life will increase by 11 percent significant in model 5 ceteris paribus. This means that education (EDU) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Family Size (FS):** Furthermore the marginal effects explained that as one unit increase in members of family size (FS) of the respondents then the probability of both worsen

and same economic life relative to improve economic life found to be insignificant, in model 5, even though persisting all other variables remain constant.

**Marital Status (MS):** More the marginal effects showed that as marital status (MS) of the respondents change the probability of the case of worsen economic life relative to improve economic life will increase significantly by 6.7 percent. This means that marital status (MS) has no effect on the improvement of economic life of women borrowers of Pakistan. While same economic life found to be insignificant respectively in model 5, *ceteris paribus*.

**Personal Annual Income (PAI):** Besides the marginal effects demonstrated that as one unit increase in personal annual income (PAI) then the probability of the case of same economic life relative to improve economic life will decrease 17.6 percent found to be significant. This means that increase in the personal annual income (PAI) improves the economic life of women borrowers of Pakistan. Whereas the worsen economic life found to be insignificant respectively in model 5, even though persisting all other variables remains constant.

#### **4.11.3.3 Odds Ratio Estimates**

The odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. So, in this the odd ratios of loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PEagg), age (AGE), education (EDU), marital

status (MS) and personal annual income (PAI) found to be significant while family size (FS) was insignificant correspondingly.

**Loan Duration (LD):** In response of model 5 the Table 4.19 refers that if loan duration (LD) increase by one point, the odds of preferring in the case worsen economic life would be expected to decrease 0.16 units accordingly of relative to improve economic life vice versa.

**Training (T):** Moreover, in model 5 the Table 4.19 describes that if training (T) increase by one point, the odds of preferring in the case of worsen economic life would be expected to increase 2.06 while, in case of same economic life would be expected to decrease 0.22 units in turn of relative to improve economic life.

**Loan Size (LS):** Further in model 5 the Table 4.19 explains that if loan size (LS) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.29 and 0.29 units in that order of relative to improve economic life.

**Aggregate Personal Empowerment (PEagg):** Further in model 5 the Table 4.19 explains that if aggregate personal empowerment (PEagg) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.13 and 0.03 units in that order of relative to improve economic life.

**Age (AGE):** Moreover, in model 5 the Table 4.19 point out that if age (AGE) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 3.39 units consistently of relative to improve economic life.

**Education (EDU):** Additionally, in model 5 the Table 4.19 point out that if education (EDU) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 2.00 units consistently of relative to improve economic life.

**Family Size (FS):** Consequently, the Table 4.19 shows that if members of family size (FS) of the respondents increase by one point, the odds of preferring in both cases worsen economic life and same economic life found to be insignificant relative to improve economic life in model 5.

**Marital Status (MS):** In response of model 5 the Table 4.19 refers that if marital status (MS) of the respondents change, the odds of preferring in the case worsen economic life would be expected to increase 2.40 units accordingly of relative to improve economic life vice versa.

**Personal Annual Income (PAI):** Additional in model 5 the Table 4.19 explains that if personal annual income (PAI) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.45 and 0.31 units in that order of relative to improve economic life.



#### 4.11.3.4 Multinomial Probit Model Estimates

To verify the results of the multinomial logit estimate robustness is checked, it also estimated by using the multinomial probit model. Table 4.19 showed the overall model that is statistically significant as the Prob  $>\chi^2 = 0.0000$ .

**Loan Duration (LD):** Accordingly, an evaluation of the variable loan duration (LD) in model 5 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Training (T):** Accordingly, an evaluation of the variable training (T) in model 5 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be positively significant. While in case of same economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Loan Size (LS):** An assessment of the variable loan size (LS) in model 5 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same economic life as compare to base category improve economic life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 5.

**Aggregate Personal Empowerment (PEagg):** Consequently, an evaluation of the variable aggregate personal empowerment (PEagg) in model 5 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Age (AGE):** Accordingly, an evaluation of the variable age (AGE) in model 5 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of economic life compared with improved economic life as base, found to be positively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Education (EDU):** Consequently, an evaluation of the variable education (EDU) in model 5 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of economic life compared with improved economic life as base, found to be positively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Family Size (FS):** Consequently, an evaluation of the variable family size (FS) in model 5 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same economic life compared with improved economic

life as base, found to be insignificant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Marital Status (MS):** Accordingly, an evaluation of the variable marital status (MS) in model 5 the coefficients specified the slight robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be positively significant. While in case of same economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 5.

**Personal Annual Income (PAI):** An assessment of the variable personal annual income (PAI) in model 5 the coefficient sign posted the very high similarity with the assessed results in both cases worsen and same economic life as compare to base category improve economic life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 5.

So, it is evident from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining economic life of the women borrowers of Pakistan. While the findings of the aggregate personal empowerment have also a significant relationship with economic life. Moreover, in case of demographic variables age, education and personal annual income has significant relationship with economic life. In contrast family size, marital status have no effect on the economic life. Thus, it is obvious from the result of

the study that not only microcredit played important role in improving economic life, but aggregate personal empowerment has also an important determinant of economic life. Now the present research further examined the impact of the three domains of the aggregate of the personal empowerment with economic life, which are as follows.

#### **4.12 Effect of Microcredit and Dimensions of Personal empowerment on Economic Life Improvement (Model 6)**

The current research analyzed the effect of Microcredit (LD, T, LS) and dimensions of personal empowerment on economic life improvement (ELI) in model 6, by using the multinomial logit model, respectively.

##### **4.12.1 Tests for Model Fit (Model 6)**

The results of model fit tests are reported in Table 4.20, which shows the “tests for goodness of fit” model 6.

Table 4.20  
*Tests for Goodness of Fit (Model 6)*

<b>Tests</b>	<b>Results</b>
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.5249
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 389.81 is statistically significant at 1 percent indicating

the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.20 shows that the Wald chi-square test statistic of 133.58 is significant at 1 percent significance level ( $p$ -value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.20, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered good as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### **4.12.2 Tests for Model Specification (Model 6)**

The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. Hausman - McFadden specification test has been used to see if the model meets the independent irrelevant alternative (IIA) assumption. The test is based on the concept that the choice probability of any two alternatives is not affected by the other alternatives. The null hypothesis tested here states that the odds between a pair of alternatives are independent of the remaining alternatives. A significant test is evidence against  $H_0$ . Furthermore, the selection of the base-outcome<sup>k</sup> is the outcome category “improve economic life”. This is due to the fact the other two outcome categories (same economic life and worsen economic life) fall under the not improvement in the economic life. Thus, “improve economic life” is entirely distinct and considered appropriate as the base outcome.

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<sup>k</sup> To choose any of the categories as the reference. From the viewpoint of overall statistical quality of prediction by the model, the choice is an arbitrary (Gujrati, 2009)

Table 4.21

*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL(Model6)*

<b>Full sample Model 6</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen ELI	6.694	12	0.877	For Ho
2 Same ELI	-8.446	12	1.000	For Ho
3 Improved ELI	-1.2	12	1.000	For Ho

. Source: "Survey, 2016 computed using STATA Version 13"

The statistical evidence in Table 4.21 indicates the chi square of the "same and improve economic life improvement (ELI)" has negative sign. On the base of the studies of Cheng and Long (2007); McFadden and Zarembka, (1974) the negative value of chi-square does not indicate a violation of independent irrelevant alternative (IIA) assumption. Thus, the evidence of the case 2 and 3 is for *Ho* and therefore fail to reject the null hypothesis. Therefore the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.12.3 The Impact of Microcredit and Dimensions of Personal Empowerment on Economic Life Improvement (Model 6)**

The fourth objective of the present study is that microcredit and dimensions of personal empowerment have an impact on women borrowers' economic life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

Table 4.22

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Economic Life Improvement (Full Sample of Model 6)*

		Economic Life Improvement (Model 6)									
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model		
Independent Variable	<i>Worsen ELI</i>		<i>Same ELI</i>		<i>Worsen ELI</i>		<i>Same ELI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>	
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff	
Cons	13.67***	-	29.49***	-	8664	2.70	6.47	4.35	8.32***	20.98***	
LD	-2.516***	-0.206***	1.018	0.066*	0.080***	-3.76	2.769	0.96	-1.387***	1.146	
T	0.529	0.0659**	-4.769***	-0.255**	1.6979	1.48	0.008***	-4.72	0.339	-3.549***	
LS	-2.031***	-0.148***	-2.999***	-0.148**	0.131***	-3.69	0.049***	-4.20	-1.253***	-2.080***	
EDM	-1.037	-0.902	1.439**	0.081**	0.3542	-1.40	4.2179**	2.30	-1.0294**	1.0504**	
FOM	1.244	0.081	3.775**	0.193***	3.4697	1.39	43.6334**	2.38	0.6396	2.9523**	
PSA	-2.060***	-0.129**	-7.228***	-0.372**	0.1274***	-2.83	0.0007***	-5.30	-1.3405***	-5.1405***	
AGE	-0.371	-0.041	2.319***	0.124*	0.689	-0.91	10.175***	3.55	-0.162	1.779***	
EDU	0.459	0.024	2.534***	0.132**	1.583	1.19	12.609***	3.50	0.214	1.837***	
FS	-0.427	-0.033	-0.233	-0.010	0.652	-0.67	0.791	-0.24	-0.232	-0.242	
MS	2.016***	0.169***	-1.504**	-0.089**	7.512***	3.39	0.222**	-2.05	1.435***	-1.400***	
PAI	-0.923**	-0.056	-3.590***	-0.185**	0.397**	-2.03	0.027***	-4.10	-0.545**	-2.802***	
LR $\chi^2$ (22)	389.81		Log likelihood		-176.37903		Number of observations		400		
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.5249						

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome

#### 4.12.3.1 Multinomial Logit Estimates

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM & PSA) on dimension of quality of life that is economic life improvement (ELI) in model 6 respectively. The multinomial logit model was used to examine the effect of loan duration, training, loan size, economic decision making, freedom of movement, political socio-cultural awareness, age, education, marital status, family size and personal annual income. Later, we also discuss the estimation results of the multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

***Loan Duration (LD):*** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 6, the multinomial logit model estimated that for an every unit increase in the months of the loan duration (LD) the multinomial log-odds for preferring in case of same economic life relative to improve economic life, found to be positively insignificant given the other variables are held constant. In contrast, in case of the worsen economic life, it would be less likely to decrease 2.5 relative to improve the economic life found to be negatively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant. This means as the loan duration (LD) increases the worsen economic life as compared to improve economic life as a base category decreases. This shows that as the loan duration of women borrowers of Pakistan increases their worsen economic life decreases.

The finding evidenced that the loan duration (LD) has a relation with economic life improvement (ELI) as the loan duration increases worsen economic life decreases. Thus, this study found sufficient evidence to reject the null hypothesis which postulates



that there is no relationship between loan duration (LD) and economic life improvement (ELI). Thus the significance of worsen economic life supports the prediction of the quality of life theory III. It focused that the loan duration (LD) of women borrowers positively increase to improve economic life. In this case it supports with this concept. This finding is in line with the previous researches such as Jaffery and Ahmed (2013); Ali, Ali and Subhan (2015) Rudrabatla, Roy and Kumar (2015).

**Training (T):** In the model 6 of Table 4.22 the multinomial logit estimate for a one unit increase in the days of training (T) the multinomial log-odds for preferring in the case of worsen economic life found to be insignificant given the other variables are held constant. In contrast, in the case of same economic life, it would be less likely to decrease 4.7 relative to improve the economic life found to be negatively significant at 1 percent ( $p < 0.01$ ), given the other variables are held constant. This means as the training increases the same economic life decreases. This finding is in line with the previous researches such as Pitt and Khandker, (1998); Forster, Greene and Pytkowska, (2003); Daley-Harris, (2009). Thus, this study found sufficient evidence to accept the alternative hypothesis which proposed there is a relationship between training (T) and women economic life improvement (ELI) is accepted. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training and improve economic life.

**Loan Size (LS):** In model 6, of Table 4.22 the multinomial logit estimate for a one unit increase in amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same economic life would be expected to decrease by 2.6 units and 1.7 respectively, given the other variables are held constant. It means changes in the

amount of loan size (LS) the less likely to worsen and same economic life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women economic life improvement (ELI) and postulates strong evidence as the expectation of the quality of life theory III.

The reason for the finding may be that when a woman get microcredit, she is supposed to be experienced and wiser than the women who are not availing the microcredit. Therefore microcredit is a kind of financial service that can be a source of financing since microcredit targets women. Based on the results, government and non-government agencies can increase women borrower's economic life through promoting the microcredit institutions. The results of the present research are alike with Jaffree and Ahmad (2013); Naeem, *et al.*, (2014).

***Economics Decision Making (EDM):*** In model 6 in Table 4.22 results obtained of the parameters from the multinomial logit model estimates in respect of economic decision making (EDM) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of model 6, from the multinomial logit model estimates in respect of economic decision making (EDM) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 1.4 units at 5 percent ( $p < 0.05$ ), respectively, relative to improve economic life, found to be significantly positive in the model 6, given the other

variables are held constant. This means that as the economic decision making (EDM) increases the same economic life also increases relative to improve economic life. This finding showed the contradictory evidence in support of quality of life theory III. The theory explained that economic decision making (EDM) improves economic life. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between economic decision making (EDM) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between economic decision making (EDM) and women economic life improvement (ELI) is thereby supported. In Pakistan, females have less chance to make economic decisions, inspired by the fact that they are earning money. Therefore, their economic life remains the same. This is the main reason why their economic decision making affects their same economic life improvement. They have to follow the decisions of men of Pakistan.

***Freedom of Movement (FOM):*** The results obtained of the parameters from the multinomial logit model estimates in respect of freedom of movement (FOM) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of model 6, from the multinomial logit model estimates in respect of freedom of movement (FOM) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 3.7 units at 5 percent ( $p < 0.05$ ), respectively, relative to improve economic life, found to be significantly positive in the model 6, given the other variables are held constant. This means that as the freedom of movement (FOM) increases the same economic life also increases relative to improve economic life. This finding showed the contradictory

evidence in support of quality of life theory III. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between freedom of movement (FOM) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between freedom of movement (FOM) and women economic life improvement (ELI) is thereby supported.

It is evident from the above results that freedom of movement (FOM) have a positive relation with same economic life improvement. The main reason is that as Pakistan has a patriarchal society, in which women have many barriers towards freedom of movement (FOM). Even they have freedom to move but they are dependents on their male counterpart to move outside and make big economic decisions. That's why there economic life improvement (ELI) remains same instead of improving.

**Political Socio-cultural Awareness (PSA):** In the model 4 of Table 4.22 the multinomial logit estimate for a one unit increase in the ability of political socio-cultural awareness (PSA) the multinomial log-odds for preferring in both cases worsen and same economic life would be expected to decrease by 2.0 units and 7.2 respectively, given the other variables are held constant. It means changes in the political socio-cultural awareness (PSA) the less likely to worsen and same economic life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women economic life improvement (ELI). Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between

political socio-cultural awareness (PSA) and women economic life improvement (ELI). Thus the coefficient contradicts the prediction of the quality of life theory III. Therefore the alternative hypothesis which proposed there is a relationship between political socio-cultural awareness (PSA) and women economic life improvement (ELI) and provides strong evidence in support of the quality of life theory III. Hence, the higher the political social-cultural awareness (PSA) the better the economic life of women borrowers of Pakistan. Because, the political social-cultural awareness (PSA) negatively affects same and worsen economic life improvement. Thus, the finding is supported by earlier studies such as Shaheed, Zia and Warraich (1998); Khan, (2010); Naz and Ahmad, (2012); Yusof, Hassan and Makol (2013).

**Age (AGE):** In model 6 in Table 4.22 results obtained of the parameters from the multinomial logit model estimates in respect of years of age (AGE) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of model 6, from the multinomial logit model estimates in respect of years of age (AGE) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 2.3 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve economic life, found to be significantly positive in the model 6, given the other variables are held constant. This means that as the age (AGE) increases the same economic life also increases relative to improve economic life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between age (AGE) and women economic life improvement (ELI) is thereby supported. Therefore, it is obvious from the above discussion that age has an impact on economic life improvement (ELI) of the women. But results indicated that at the age (AGE) increases same economic life also rises. As the women age increases their economic activity decreases, because in Pakistan there are many economic factors that hinder the economic output of women as their age increases their chance of getting loan also decreases. Therefore, their economic life remains same and no improvement.

**Education (EDU):** In model 6, apart from the variables discussed above Table 4.22 results obtained of the parameters from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of worsen economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same economic life of model 6, from the multinomial logit model estimates in respect of years of education (EDU) the multinomial log-odds for preferring in case of same economic life would be expected to increase by 2.5 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve economic life, found to be significantly positive in the model 5, given the other variables are held constant. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women economic

life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between education (EDU) and women economic life improvement (ELI) is thereby supported.

The above discussion indicated that education has an impact on economic life of the women. But the results indicate that as the education increases same health life increases. It is also important to emphasize to the extent that education effects on economic life of women borrowers occur as a result of negative perception of education, particularly self-concepts and attitudes. In Pakistan, the patriarchal society parents consider education the wastage of time and resources. So, how well a woman is educated, their economic life remains the same.

**Family Size (FS):** In accordance with expected prediction, that the both coefficients of family size (FS) of model 6, from the multinomial logit model estimated that for an every unit increase in family size (FS) the multinomial log-odds for preferring in both cases worsen economic life and same economic life relative to improve economic life, found to be insignificant, given the other variables are held constant. It means that the more the family size (FS), the less likely to be worsen as well as same economic life as compare to base category improve economic life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between family size (FS) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between family size (FS) and women economic life improvement (ELI) is not supported. The result contradicts the quality of life theory III. That focused on the

impact of family size (FS) on economic life improvement (ELI) relative to improve. The above result focused that there is no relationship of family size (FS) and worsen and same economic life. The reason is the financial burden, the family size, neither worsen nor same. It varies due to the circumstances of women.

**Marital Status (MS):** In the model 6 of Table 4.22 the multinomial logit estimate for a change in marital status (MS) of the respondents the multinomial log-odds for preferring in the case of worsen economic life would be expected to increase by 2.0 unit given the other variables are held constant. It shows that as the marital status (MS) of women borrowers of Pakistan changes, their worsen economic life increases based on positively significant at 1 percent ( $p < 0.01$ ) parameter established. In contrast, in the case of same economic life would be expected to decrease by 1.5 unit given the other variables are held constant. It shows that as the marital status (MS) of women borrowers of Pakistan changes, their same economic life decreases based on negatively significant at 5 percent ( $p < 0.05$ ) parameter established. This means that as the marital status (MS) changes worsen economic life increases, while (MS) have a negative effect on same economic life relative to improve economic life.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between marital status (MS) and women's economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's economic life improvement (ELI) is supported by many researches such as Sahi (2013); Anyanwu (2014). Thus, it is evident from the above mentioned results that as marital status (MS) changes worsen economic life increases. It contradicts with the quality of life theory III. As, the theory



emphasis on the negative effect between worsen economic life and marital status (MS). Consequently, in case of same economic life, marital status (MS) has a negative effect, as the marital status (MS) changes same economic life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of marital status (MS) and improve economic life.

**Personal Annual Income (PAI):** As seen in the Table 4.22, results obtained of the parameters of model 6, from the multinomial logit model estimates in respect of personal annual income (PAI) indicates that for a one unit increase in personal annual income (PAI) the multinomial log-odds for preferring in both cases worsen economic life and same economic would be expected to decrease by 0.9 unit and 3.5 respectively, relative to improve economic life. It means that the more the personal annual income (PAI) the less likely to worsen and same economic life than to improve based on negative and significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ) parameter established correspondingly. Hence the more the personal annual income (PAI) the better the economic life, given the other variables is held constant.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between the personal annual income (PAI) and women economic life improvement (ELI). Therefore the alternative hypothesis which proposed there is a relationship between the personal annual income (PAI) and women economic life improvement (ELI) in support of the quality of life theory III. The findings concur with the view that might be as the women borrower's income improved their expenditures also improved. The increased in personal income also raise the probability of improvement in self-confidence, self-respect, dignity. This finding is in line with the

previous researches such as Al-Mamun, Wahab and Malarvizhi, (2010); Yousaf, Hassan and Makol (2013).

#### **4.12.3.2 The Marginal Effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. The marginal effects of model 6 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), age (AGE), education (EDU), marital status (MS) and personal annual income (PAI) found to be significant while family size (FS) was insignificant correspondingly.

***Loan Duration (LD):*** Accordingly, the marginal effects illustrated that as one unit increase in loan duration (LD) then the probability of worsen economic life relative to improve economic life will decrease by 20.6 percent found to be significant, in model 6, ceteris paribus. This means that increase in the loan duration (LD) improves the economic life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan duration (LD) then the probability of same economic life relative to improve economic life will increase significantly by 6.6 percent keeping all other variables remain constant. This means that loan duration (LD) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Training (T):** In addition the marginal effects illustrated that as one unit rise in training (T) then the probability of worsen economic life relative to improve economic life will rise 6.59 percent, found to be significant in model 6, even however keeping all other variables remain constant. This means that training (T) has no effect on the improvement of economic life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in training (T) then the probability of the same economic life relative to improve economic life will decrease by 25.5 percent significantly in model 6, keeping, all other variables constant. This means that increase in the training (T) improves the economic life of women borrowers of Pakistan.

**Loan Size (LS):** Further the marginal effects showed that as one unit increase in loan size (LS) then the probability of the cases of worsen and same economic life relative to improve economic life will decrease significantly by 14.8 percent and 14.8 percent respectively in model 5, ceteris paribus. This means that loan size (LS) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Economic Decision Making (EDM):** Moreover the marginal effects illustrated that as one unit increase in economic decision making (EDM) then the probability of worsen economic life relative to improve the economic life found to be insignificant, in model 6 ceteris paribus. On the other hand, the marginal effects portrayed that as one unit increase in economic decision making (EDM) then the probability of same economic life relative to improve economic life will increase by 8.1 percent but highly significant in model 6. However, holding all other variables remains constant vice versa. This

means that economic decision making (EDM) has no effect on the improvement of economic life of women borrowers of Pakistan.

***Freedom of Movement (FOM):*** Moreover the marginal effects illustrated that as one unit increase in freedom of movement (FOM) then the probability of worsen economic life relative to improve the economic life found to be insignificant, in model 6 ceteris paribus. On the other hand, the marginal effects depicted that as one unit increase in freedom of movement (FOM) then the probability of same economic life relative to improve economic life will increase by 19.3 percent but highly significant in model 6. However, holding all other variables remains constant vice versa. This means that freedom of movement (FOM) has no effect on the improvement of economic life of women borrowers of Pakistan.

***Political Socio-cultural Awareness (PSA):*** Further the marginal effects showed that as one unit increase in political socio-cultural awareness (PSA) then the probability of the cases of worsen and same economic life relative to improve economic life will decrease significantly by 12.9 percent and 37.2 percent respectively in model 6, ceteris paribus. This means that increase in the political socio-cultural awareness (PSA) improves the economic life of women borrowers of Pakistan.

***Age (AGE):*** Moreover the marginal effects illustrated that as one unit increase in age (AGE) then the probability of worsen economic life relative to improve the economic life found to be insignificant, in model 6 ceteris paribus. On the other hand, the marginal effects represented that as one unit increase in age (AGE) then the probability of same economic life relative to improve economic life will increase by 12.4 percent but highly

significant in model 6. However, holding all other variables remains constant vice versa. This means that age (AGE) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Education (EDU):** Likewise the marginal effects demonstrated that as one unit increase in education (EDU) then the probability of worsen economic life relative to improve the economic life found to be insignificant, in model 6 ceteris paribus. On the other hand, the marginal effects described that as one unit increase in education (EDU) then the probability of same economic life relative to improve economic life will increase by 13.2 percent but highly significant in model 6. However, holding all other variables remains constant vice versa. This means that education (EDU) has no effect on the improvement of economic life of women borrowers of Pakistan.

**Family Size (FS):** Furthermore the marginal effects explained that as one unit increase in family size (FS) then the probability of both worsen and same economic life relative to improve the economic life found to be insignificant, in model 6, even though persisting all other variables remain constant.

**Marital Status (MS):** In addition the marginal effects illustrated that as marital status (MS) change then the probability of worsen economic life relative to improve economic life will rise 16.9 percent, found to be significant in model 6, even however keeping all other variables remain constant. This means that marital status (MS) has no effect on the improvement of economic life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as marital status (MS) changes the probability of the same economic life relative to improve economic life will decrease by 8.9 percent significantly in model 6, Keeping, all other variables constant. This means that change in the marital status (MS) improves the economic life of women borrowers of Pakistan.

**Personal Annual Income (PAI):** Besides the marginal effects demonstrated that as one unit increase in personal annual income (PAI) then the probability of the case of same economic life relative to improve economic life will decrease 17.6 percent found to be significant. This means that increase in the personal annual income (PAI) improves the economic life of women borrowers of Pakistan. On the other hand, worsen economic life insignificant respectively in model 6, even though persisting all other variables remain constant.

#### 4.12.3.3 Odds Ratio Estimates

The odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. So, in the model 6 the odds ratios of loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), age (AGE), education (EDU), marital status (MS) and personal annual income (PAI) found to be significant while family size (FS) was insignificant correspondingly.

**Loan Duration (LD):** In response of the model 6 the Table 4.22 refers that if loan duration (LD) increase by one point, the odds of preferring in the case worsen economic life would be expected to decrease 0.08 units accordingly of relative to improve economic life vice versa.

**Training (T):** Moreover, in model 6 the Table 4.22 point out that if training (T) increase by one point, the odds of preferring in the case of same economic life would be expected to decrease 0.008 units relative to improve economic life.

**Loan Size (LS):** Further in model 6 the Table 4.22 explains that if loan size (LS) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.13 and 0.04 units in that order of relative to improve economic life.

**Economic Decision Making (EDM):** Moreover, in model 6 the Table 4.22 point out that if economic decision making (EDM) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 4.2 units relative to improve economic life.

**Freedom of Movement (FOM):** Furthermore, in model 6 the Table 4.22 point out that if freedom of movement (FOM) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 43.63 units relative to improve economic life.

**Political Socio-cultural Awareness (PSA):** Additionally, in model 6 the Table 4.22 explains that if political socio-cultural awareness (PSA) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.12 and 0.0007 units in that order of relative to improve economic life.

**Age (AGE):** Moreover, in model 6 the Table 4.22 point out that if age (AGE) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 10.17 units relative to improve economic life.

**Education (EDU):** Moreover, in model 6 the Table 4.22 point out that if education (EDU) increase by one point, the odds of preferring in the case of same economic life would be expected to increase 12.60 units relative to improve economic life.

**Family Size (FS):** Consequently, the Table 4.22 shows that if members of family size (FS) increase by one point, the odds of preferring in both cases worsen economic life and same economic life found to be insignificant relative to improve economic life in model 6.

**Marital Status (MS):** Additionally, in model 6 the Table 4.22 explains that if marital status (MS) changes, the odds of preferring in the case of worsen economic life would be expected to increase 7.51 units relative to improve economic life. While, in the case of same economic life would be expected to decrease 0.22 units relative to improve economic life.



**Personal Annual Income (PAI):** Moreover in model 6 the Table 4.22 explains that if personal annual income (PAI) increase by one point, the odds of preferring in both cases worsen economic life and same economic life would be expected to decrease 0.39 and 0.027 units in that order of relative to improve economic life.

#### 4.12.3.4 Multinomial Probit Model Estimates

To verify the results of the multinomial logit estimate robustness is checked with the help of Probit model. Table 4.22 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** Accordingly, an evaluation of the variable loan duration (LD) in model 6 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Training (T):** Correspondingly, an evaluation of the variable training (T) in model 6 the coefficients specified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of same economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Loan Size (LS):** An assessment of the variable loan size (LS) in model 6 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and

same economic life as compare to base category improve economic life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 6.

***Economic Decision Making (EDM):*** An evaluation of the variable economic decision making (EDM) in model 6 the coefficient sign posted the very slight similarity with the assessed results in the case of worsen as compared to base category improve economic life found to be significantly negative. In contrast, in the case of same economic life as compare to base category improve economic life found to be significantly positive. Thus, the results highlighted that the results have minor differences in case of worsen economic life with the results of the multinomial logit model 6.

***Freedom of Movement (FOM):*** Correspondingly, an evaluation of the variable freedom of movement (FOM) in model 6 the coefficients identified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of same economic life compared with improved economic life as base, found to be positively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

***Political Socio-cultural Awareness (PSA):*** An assessment of the variable political socio-cultural awareness (PSA) in Model 6 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same economic life as compare to base category improve economic life found to be significantly negative.

Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 6.

**Age (AGE):** Consistently, an evaluation of the variable age (AGE) in model 6 the coefficients mentioned the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of same economic life compared with improved economic life as base, found to be positively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Education (EDU):** Similarly, an evaluation of the variable education (EDU) in model 6 the coefficients identified the high robust similarity with the evaluated results in the case of worsen economic life compared with improved economic life as base, found to be insignificant. While in case of same economic life compared with improved economic life as base, found to be positively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Family Size (FS):** Consequently, an evaluation of the variable family size (FS) in model 6 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same economic life compared with improved economic life as base, found to be insignificant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Marital Status (MS):** Accordingly, an evaluation of the variable marital status (MS) in model 6 the coefficients specified the slight robust similarity with the evaluated results

in the case of worsen economic life compared with improved economic life as base, found to be positively significant. While in case of same economic life compared with improved economic life as base, found to be negatively significant. Accordingly the results point out that all the results are consistent with the results of the multinomial logit model 6.

**Personal Annual Income (PAI):** An assessment of the variable personal annual income (PAI) in model 6 the coefficient sign posted the very high similarity with the assessed results in both cases worsen and same economic life as compare to base category improve economic life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 6.

Hence, in conclusion, it is evident from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining the economic life of the women borrowers of Pakistan. While the findings of the dimensions of personal empowerment have also a significant relationship with economic life. Moreover, in case of demographic variables age, education, marital status and personal annual income has significant relationship with economic life. While family size has no effect on economic life of women borrowers of Pakistan. So, it is evident from the result of the study that not only microcredit played important role in improving economic life, but dimensions of personal empowerment has also an important determinant of economic life improvement (ELI). Now, the current study is turning to move additionally to see the impact of the aggregate of the personal empowerment with familial life improvement, which are as follows.

### 4.13 Effect of Microcredit and Aggregate of Personal Empowerment (PEagg) on Familial Life Improvement (Model 7)

The present study analyzed the effect of microcredit (LD, T, LS) and aggregate personal empowerment (PEagg) on familial life Improvement in model 7 respectively. The multinomial logit model was used to examine the effect of demographic variables, microcredit (LD, T, LS) and aggregate of personal empowerment (PEagg) on familial Life Improvement. Later, probit model is discussed to check the robustness of logit model.

#### 4.13.1 Tests for Model Fit (Model 7)

The results of model fit tests are reported in Table 4.23, which shows the “tests for goodness of fit” model 7.

Table 4.23  
*Tests for Goodness of Fit (Model 7)*

Tests	Results (Model 7)
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.1932
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 160.99 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.23

shows that the Wald chi-square test statistic of 133.42 is significant at 1 percent significance level ( $p$ -value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.20, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered good as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### 4.13.2 Tests for Model Specification (Model 7)

Before we estimate the model, to check whether the model specification the Independent Irrelevant Alternative (IIA) assumption. The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. Table 4.24 presents the results of the Independent Irrelevant Alternative (IIA) assumption test and shows that overall the model is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

Table 4.24  
*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model7)*

<b>Full sample Model 7</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen FLI	24.271	10	0.007	Against Ho
2 Same FLI	5.584	10	0.849	For Ho
3 Improved FLI	-10.192	10	1.000	For Ho

Source: "Survey, 2016 computed using STATA Version 13".

Thus, the evidence of the case 3 are for  $H_0$  and therefore fail to reject the null hypothesis. Therefore the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.13.3 The Impact of Microcredit and Aggregate of Personal Empowerment (PEagg) on Familial Life Improvement (Model 7)**

The present study fourth objective focused on the impact of microcredit and aggregate of personal empowerment on women borrowers' familial life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.



Table 4.25

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Familial Life Improvement (Full Sample of Model 7)*

		Familial Life Improvement (Model 7)									
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model		
Independent Variable	<i>Worsen FLI</i>		<i>Same FLI</i>		<i>Worsen FLI</i>		<i>Same FLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>	
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff	
Cons	7.825***	-	12.10***	-	2503***	3.36	1799***	6.44	6.279***	9.955***	
LD	-0.657*	-0.048	-0.739**	-0.122*	0.517*	-1.77	0.477**	-2.49	-0.484*	-0.610**	
T	-0.394*	0.011	-0.934***	-0.190***	0.674*	-1.85	0.392***	-4.73	-0.324**	-0.760***	
LS	-0.519**	0.018	-1.276***	-0.261***	0.594*	-1.90	0.279***	-5.88	-0.423**	-1.047***	
PEagg	-0.798***	0.010	-1.741***	-0.349***	0.449**	-2.35	0.175***	-5.35	-0.754***	-0.137***	
AGE	0.445*	-0.004	0.957***	0.191***	1.561	1.79	2.604***	4.32	0.333*	0.755***	
EDU	0.214	-0.025	0.746***	0.1602***	1.238	1.20	2.108***	3.71	0.163	0.593***	
FS	-1.117***	-0.169***	-0.187	0.046	0.327***	-4.04	0.828	-0.63	-0.827***	-0.151	
MS	-0.023	-0.007	0.043	0.012	0.976	-0.09	1.044	0.17	0.030	0.377	
PAI	-0.04877	0.0579**	-0.804***	-0.187***	0.9523	-0.32	0.4473***	-3.92	-0.0489	-0.6602***	
LR $\chi^2$ (18)	160.99		Log likelihood		-336.04637		Number of observations		400		
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.1932						

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.



#### 4.13.3.1 Multinomial Logit Estimates

In the present study microcredit is measured in the form of loan duration, loan size and training. Similarly, personal empowerment is measured as an aggregate of all its dimensions to check the impact of all the above mentioned variables on the dimension of quality of life that is familial life improvement (FLI). Now, the present study discusses them one by one.

**Loan Duration (LD):** In model 7, of Table 4.25 the multinomial logit estimate for a one unit increase in amount of loan duration (LD) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.65 units and 0.73 respectively, given the other variables are held constant. It means changes in the amount of the loan duration (LD) the less likely to worsen and same familial life than to improve, based on negatively significant at 10 percent ( $p < 0.10$ ) and 5 percent ( $p < 0.05$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and women's familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between loan duration (LD) and women's familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are alike with Saleem *et al.*, (2011); Mahmood (2011).

**Training (T):** In model 7, of Table 4.25 the multinomial logit estimate for a one unit increase in the days of training (T) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.39 units and 0.93 respectively, given the other variables are held constant. It means changes in the

amount of the training (T) the less likely to worsen and same familial life than to improve, based on negatively significant at 10 percent ( $p < 0.10$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between training (T) and women familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are consistent with Nader (2008); Gine and Mansuri, (2014).

**Loan Size (LS):** In model 7, of Table 4.25 the multinomial logit estimate for a one unit increase in amount of loan size (LS) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.51 units and 1.27 respectively, given the other variables are held constant. It means changes in the amount of the loan size (LS) the less likely to worsen and same familial life than to improve, based on negatively significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women's familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between loan size (LS) and women familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are consistent Al-Mamun and Adaikalam (2011); Gedion, Oyugi and Munyitha (2015).

**Aggregate Personal Empowerment (PEagg):** In model 7, of Table 4.25 the multinomial logit estimate for a one unit increase in aggregate personal empowerment (PEagg) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.79 units and 1.74 respectively, given the other variables are held constant. It means changes in the aggregate personal empowerment (PEagg) the less likely to worsen and same familial life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between aggregate personal empowerment (PEagg) and women's familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between aggregate personal empowerment (PEagg) and women familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are consistent with Boyd (1999) and Oladipo (2009).

**Age (AGE):** In model 7, of Table 4.25 the multinomial logit estimate for a one unit increase in years of age (AGE) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to increase by 0.44 units and 0.95 respectively, given the other variables are held constant. It means changes in the years of age (AGE) the less likely to worsen and same familial life than to improve, based on positively significant at 10 percent ( $p < 0.10$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. This means that as the years of age increases worsen and same familial life increases relative to improve familial life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's familial life improvement (FLI). Therefore the

alternative hypothesis which proposed there is a relationship between age (AGE) and women's familial life improvement (FLI) is accepted and contradicts the evidence of the quality of life theory III. In the present study the women who are above than 46 to 65 years old only 15 percent shows improve familial life. The rest of the women have not improved their family life. Hence it is proved that as the age increases improve familial life decreases.

**Education (EDU):** In model 7 in Table 4.25 results obtained of the parameters from the multinomial logit model estimates in respect of education (EDU) the multinomial log-odds for preferring in case of worsen familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same familial life of Model 7, from the multinomial logit model estimates in respect of education (EDU) the multinomial log-odds for preferring in case of same familial life would be expected to increase by 0.74 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly positive in the model 7, given the other variables are held constant. This means that as the education (EDU) increases the same familial life also increases relative to improve familial life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between education (EDU) and women familial life improvement (FLI) is thereby supported. It is evident from the above finding of the study that education has an impact on same familial life relative to improve familial life. This means that as the

education increases the familial life remains same. The main reason is that even though having education the majority of the women have low participation in familial life improvement (FLI) decision in Pakistan due to the traditional dominant role of men in their lives. Thus, the results are in line with Powdthavee, Lekfuangfu, and Wooden (2015).

**Family Size (FS):** In model 7 in Table 4.25 results obtained of the parameters from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in case of same familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of worsen familial life of model 7, from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in case of worsen familial life would be expected to decrease by 1.11 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly negative in the model 7, given the other variables are held constant. This means that as the family size (FS) increases worsen familial life also decreases relative to improve familial life. This finding showed the strong evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women's familial life improvement. Therefore the alternative hypothesis which proposed there is a relationship between family size (FS) and women's familial life improvement (FLI) is thereby supported. This finding is supported by previous researches such as Parveen (2007); Bandyopadhyay *et al.*, (2011).

**Marital Status (MS):** In accordance with expected prediction, that the both coefficients of marital status (MS) of model 7, from the multinomial logit model estimated that for a change in marital status (MS) the multinomial log-odds for preferring in both cases worsen familial life improvement and same familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. It means that the more the difference in the marital status (MS), the less likely to be worsen as well as same familial life as compare to base category improve familial life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between marital status (MS) and women familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between marital status (MS) and women familial life improvement (FLI) is not supported. The result contradicts the quality of life theory III. That focused on the impact of Marital Status on familial life improvement (FLI) relative to improve. The marital Status (MS) has no effect on familial life improvement (FLI) of women borrowers due to the societal norms of the society of Pakistan. Women in any relation are considered as less wise, emotional, sensitive and foolish either before or after marriage. That's why their marital status (MS) does not play any role in their familial life improvement (FLI).

**Personal Annual Income (PAI):** In model 7 in Table 4.25 results obtained of the parameters from the multinomial logit model estimates in respect of personal annual income (PAI) the multinomial log-odds for preferring in case of worsen familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same familial life of model 7, from the

multinomial logit model estimates in respect of personal annual income (PAI) the multinomial log-odds for preferring in case of same familial life would be expected to decrease by 0.80 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly negative in the model 7, given the other variables are held constant. This means that as the personal annual income (PAI) increases the same familial life decreases relative to improve familial life. This finding showed the strong evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between Personal annual income (PAI) and women familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between Personal annual income (PAI) and women familial life improvement (FLI) is thereby supported. This finding is in line with the previous researches such as Jaffree and Ahmad (2013); Ali, Ali and Subhan (2015).

#### **4.13.3.2 Marginal Effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. The marginal effects of model 7 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS), aggregate of personal empowerment (PEagg), age (AGE), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while marital status (MS) was insignificant correspondingly.

***Loan Duration (LD):*** The marginal effects revealed that as one unit increase in loan duration (LD) then the probability in the case of same familial life relative to improve

familial life will decrease 12.2 percent found to be significant, in model 7, keeping, all other variables constant. This means that increase in the loan duration (LD) improves the familial life of women borrowers of Pakistan.

**Training (T):** Similarly, the marginal effects revealed that as one unit increase in training (T) then the probability in the case of same familial life relative to improve familial life will decrease 19 percent found to be significant, in model 7, citrus peribus. This means that increase in the training (T) improves the familial life of women borrowers of Pakistan.

**Loan Size (LS):** Moreover, the marginal effects revealed that as one unit increase in loan size (LS) then the probability in the case of same familial life relative to improve familial life will decrease 26.1 percent found to be significant, in model 7, keeping, all other variables constant. This means that increase in the loan size (LS) improves the familial life of women borrowers of Pakistan.

**Aggregate Personal Empowerment (PEagg):** The marginal effects revealed that as one unit increase in aggregate personal empowerment (PEagg) then the probability in the case of same familial life relative to improve familial life will decrease 34.9 percent found to be significant, in model 7, Keeping, all other variables constant. This means that increase in the personal empowerment (PEagg) improves the familial life of women borrowers of Pakistan.

**Age (AGE):** The marginal effects revealed that as one unit increase in age (AGE) then the probability in the case of same familial life relative to improve familial life will



increase 19.1 percent found to be significant, in model 7, Keeping, all other variables constant. This means that age (AGE) has no effect on the improvement of familial life of women borrowers of Pakistan.

**Education (EDU):** Correspondingly, the marginal effects revealed that as one unit increase in education (EDU) then the probability in the case of same familial life relative to improve familial life will increase 12.2 percent found to be significant, in model 7, Keeping, all other variables constant. This means that education (EDU) has no effect on the improvement of familial life of women borrowers of Pakistan.

**Family Size (FS):** More the marginal effects showed that as one unit increase in family size (FS) than the probability of the case of worsen familial life relative to improve familial life will decrease significantly by 16.9 percent in model 7, ceteris paribus. This means that increase in the family size (FS) improves the familial life of women borrowers of Pakistan.

**Marital Status (MS):** Furthermore, the marginal effects explained that as marital status (MS) changes the probability of both worsen and same familial life relative to improve the familial life found to be insignificant, in model 7, even though persisting all other variables remain constant.

**Personal Annual Income (PAI):** In addition, the marginal effects illustrated that as one unit rise in personal annual income (PAI) then the probability of worsen familial life relative to improve familial life will rise 5.7 percent, found to be significant in model 7, even however keeping all other variables remain constant. This means that

personal annual income (PAI) has no effect on the improvement of familial life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in personal annual income (PAI) then the probability of the same familial life relative to improve familial life will decrease by 18.7 percent significantly in model 7, Keeping, all other variables constant. This means that increase in the personal annual income (PAI) improves the familial life of women borrowers of Pakistan.

#### **4.13.3.3 Odds Ratio Estimates**

Logistic estimates are presented in terms of the logit coefficients or odds ratio. Besides obtaining the coefficients presented in Table 4.25, it is important to obtain the odds ratio. This is because the odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So, in the model 7 the odds ratios of loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PEagg), age (AGE), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while marital status (MS) was insignificant correspondingly.

***Loan Duration (LD):*** In the model 7, the Table 4.25 explains that if loan duration (LD) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.51 and 0.47 units in that order of relative to improve familial life.

**Training (T):** Further, the model 7, the Table 4.25 explains that if training (T) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.67 and 0.39 units in that order of relative to improve familial life.

**Loan Size (LS):** Moreover, in the model 7, the Table 4.25 explains that if loan size (LS) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.59 and 0.27 units in that order of relative to improve familial life.

**Aggregate Personal Empowerment (PEagg):** Similarly, in the model 7, the Table 4.25 explains that if aggregate personal empowerment (PEagg) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.44 and 0.17 units in that order of relative to improve familial life.

**Age (AGE):** Correspondingly, in model 7 the Table 4.25 point out that if age (AGE) increase by one point, the odds of preferring in the case of same familial life would be expected to increase 2.60 units relative to improve familial life.

**Education (EDU):** Moreover, in model 7 the Table 4.25 point out that if education (EDU) increase by one point, the odds of preferring in the case of same familial life would be expected to increase 2.108 units relative to improve familial life.

**Family Size (FS):** Correspondingly, in model 7 the Table 4.25 point out that if family size (FS) increase by one point, the odds of preferring in the case of worsen familial life would be expected to decrease 0.32 units relative to improve familial life.

**Marital Status (MS):** Consequently, the Table 4.25 shows that if marital status (MS) of respondents change, the odds of preferring in both cases worsen familial life and same familial life found to be insignificant relative to improve familial life in model 7.

**Personal Annual Income (PAI):** Moreover, in model 7 the Table 4.25 point out that if personal annual income (PAI) increase by one point, the odds of preferring in the case of same familial life would be expected to decrease 0.44 units relative to improve familial life.

#### 4.13.3.4 Multinomial Probit Model Estimates

To verify the results of the multinomial logit estimate robustness is checked, it is estimated by using the multinomial probit model. Table 4.25 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** An assessment of the variable loan duration (LD) in model 7 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 7.

**Training (T):** An evaluation of the variable training (T) in model 7 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compared to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 7.

**Loan Size (LS):** An examination of the variable loan size (LS) in model 7 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 7.

**Aggregate Personal Empowerment (PEagg):** An assessment of the variable aggregate personal empowerment (PEagg) in model 7 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 7.

**Age (AGE):** An evaluation of the variable age (AGE) in model 7 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly positive. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 7.

**Education (EDU):** Similarly, an evaluation of the variable education (EDU) in model 7 the coefficients identified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be insignificant. While in case of same familial life compared with improved familial, life as base, found to be positively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 7.

**Family Size (FS):** Accordingly, an evaluation of the variable family size (FS) in model 7 the coefficients specified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be negatively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 7.

**Marital Status (MS):** Consequently, an evaluation of the variable marital status (MS) in model 7 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same familial life compared with improved familial life as base, found to be insignificant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 7.

**Personal Annual Income (PAI):** Similarly, an evaluation of the variable personal annual income (PAI) in model 7 the coefficients identified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be insignificant. While in case of same familial life compared with familial life as base, found to be negatively significant. Accordingly,

the results point out that all the results are consistent with the results of the multinomial logit model 7.

Therefore, it is evident from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining familial life of the women borrowers of Pakistan. While the findings of the aggregate personal empowerment have also a significant relationship with familial life. Moreover, in case of demographic variables age, education, family size and personal annual income have significant relationship with familial life. In contrast, marital status has no effect on the familial life. So, it is evident from the result of the study that not only microcredit played important role in improving familial life, but aggregate personal empowerment has also an important determinant of familial life. Now the present research further examined the impact of the three dimensions of the aggregate of the personal empowerment with familial life, which are as follows.

#### **4.14 Effect of Microcredit and dimensions of Personal empowerment on Familial Life Improvement (Model 8)**

The current research analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment on familial life improvement (FLI) in model 8, by using the multinomial logit model, respectively. The multinomial logit model was used to examine the effect of demographic variables, microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM, PSA) on familial Life Improvement. Later, probit model is discussed to check the robustness of logit model.

#### 4.14.1 Tests for Model Fit (Model 8)

The results of model fit tests are reported in Table 4.26, which shows the “tests for goodness of fit” model 8.

Table 4.26  
*Tests for Goodness of Fit (Model 8)*

Tests	Results (Model 8)
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.2288
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 190.57 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.26 shows that the Wald chi-square test statistic of 120.95 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.26, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.



#### 4.14.2 Test for Model Specification (Model 8)

Before we estimate the model, to check whether the model specification the Independent Irrelevant Alternative (IIA) assumption. The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. Table 4.27 presents the results of the Independent Irrelevant Alternative assumption (IIA) test and shows that overall the model is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

Table 4.27  
*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model8)*

Full sample Model 8				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen FLI	12.844	12	0.380	For Ho
2 Same FLI	2.588	12	0.998	For Ho
3 Improved FLI	-2.06	12	1.000	For Ho

Source: "Survey, 2016 computed using STATA Version 13".

The statistical evidence in Table 4.27 indicates the chi square of the "Improved familial life" has negative sign. On the base of the studies of Cheng and Long (2007); McFadden and Zarembka, (1974) the negative value of chi-square does not indicate a violation of Independent Irrelevant Alternative assumption (IIA) assumption. Thus, the evidence of the case 3 are for Ho and therefore fail to reject the null hypothesis. Therefore, the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.14.3 The Impact of Microcredit and dimensions of Personal empowerment on Familial Life Improvement (Model 8)**

The present study fourth objective focused on the impact of microcredit and dimensions of personal empowerment on women borrowers' familial life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model. The results are shown in the give below Table 4.28.



Table 4.28

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Familial Life Improvement (Full Sample of Model 8)*

		Familial Life Improvement (Model 8)								
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen FLI</i>		<i>Same FLI</i>		<i>Worsen FLI</i>		<i>Same FLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	4.86**	-	11.63***	-	129.39	1.98	11270	5.50	4.456***	9.691***
LD	-0.980**	-0.081	-0.955***	-0.145*	0.375**	-2.51	0.384***	-2.63	-0.764***	-0.719**
T	-0.466*	0.030	-1.246***	-0.260***	0.626*	-1.95	0.287***	-5.48	-0.391**	-0.958***
LS	-0.018	0.095**	-1.127***	-0.271***	0.9818	-0.06	0.323***	-4.42	-0.108	-0.965***
EDM	0.733	0.066	0.651*	0.093	2.081	1.64	1.918*	1.85	0.488	0.488*
FOM	-1.839***	-0.223***	-0.9807**	-0.0761	0.158***	-3.64	0.375**	-2.03	-1.309***	-0.6229*
PSA	0.116	0.0169***	-1.708***	-0.423***	1.123	0.28	0.181***	-4.52	0.073**	-1.384***
AGE	0.518*	-0.009	1.108***	0.222***	1.679*	1.88	3.029***	4.41	0.393**	0.900***
EDU	0.529***	-0.006	1.084***	0.216***	1.697***	2.65	2.959***	4.52	0.413***	0.835***
FS	-0.866***	-0.149***	0.412	0.085	0.420***	-3.13	1.042	0.12	-0.644***	-0.039
MS	0.057	-0.010	0.230	0.050	1.059	0.18	1.259	0.70	0.108	0.141
PAI	0.491	0.090***	-0.943***	-0.232***	1.0504	0.28	0.389***	-4.09	0.0041	-0.7982***
LR $\chi^2$ (22)	190.57		Log likelihood		-321.25239		Number of observations		400	
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.2288					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HLI is the base outcome.

#### 4.14.3.1 Multinomial Logit Estimates

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM & PSA) on dimension of quality of life that is familial health life in model 8 respectively. The multinomial logit model was used to examine the effect of loan duration, training, loan size, economic decision making, freedom of movement, political socio-cultural awareness, age, education, marital status, family size and personal annual income. Later, we also discuss the estimation results of the multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

***Loan Duration (LD):*** In model 8, of Table 4.28 the multinomial logit estimate for a one unit increase in the months of loan duration (LD) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.98 units and 0.95 respectively, given the other variables are held constant. It means changes in the amount of the loan duration (LD) the less likely to worsen and same familial life than to improve, based on negatively significant at 5 percent ( $p < 0.05$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and women's familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between loan duration (LD) and women's familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are in line with Ahmed, Siwar and Idris (2011); Yasmin & Ikemoto (2015).

**Training (T):** In model 8, of Table 4.28 the multinomial logit estimate for a one unit increase in days of training (T) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 0.46 units and 1.24 respectively, given the other variables are held constant. It means changes in the days of training (T) the less likely to worsen and same familial life than to improve, based on negatively significant at 10 percent ( $p < 0.10$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between training (T) and women's familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the quality of life theory III. The results of the present research are in line with Karlan and Valdivia (2011); Valdivia, (2014).

**Loan Size (LS):** In the model 8 of Table 4.28 the multinomial logit estimate for a one unit increase in the amount of loan size (LS) the multinomial log-odds for preferring the in case of worsen familial life relative to improve familial life, found to be insignificant. While in the case of same familial life than to improve the loan size (LS) multinomial log-odds for preferring would be expected to decrease by 1.1 units based on negative and significant at 1 percent ( $p < 0.01$ ) parameter established given the other variables are held constant. It means changes in the loan size (LS) the less likely to same familial life than to improve. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women familial life improvement

(FLI). Therefore, the alternative hypothesis which proposed there is a relationship between loan size (LS) and women familial life improvement (FLI) and provides strong evidence in support of the quality of life theory III. This finding is consistent with the previous researches such as Saleem, Zaman, Khattak and Qureshi (2011); Al-Mamun, Adaikalam and Wahab (2012).

***Economic Decision Making (EDM):*** In model 8 in Table 4.28 results obtained of the parameters from the multinomial logit model estimates in respect of economic decision making (EDM) the multinomial log-odds for preferring in case of worsen familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same familial life of model 8, from the multinomial logit model estimates in respect of economic decision making (EDM) the multinomial log-odds for preferring in case of same familial life would be expected to increase by 0.65 units at 10 percent ( $p < 0.10$ ), respectively, relative to improve familial life, found to be significantly positive in the model 8, given the other variables are held constant. This means that as the economic decision making (EDM) increases the same familial life also increases relative to improve familial life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between economic decision making (EDM) and women's familial life improvement (FLI). Therefore the alternative hypothesis which proposed there is a relationship between economic decision making (EDM) and women familial life

improvement (FLI) is thereby supported. Economic decision making means that women must have control over their lives both at home and outside. But this is not the case in Pakistan. As Pakistan is an underdeveloped country and women depends on men on their all decisions either inside or outside. In spite of the fact that they are earning money. All the decision of the family is taken by men. This is the main reason why their economic decision making did not improve their familial life. They have to follow the decisions of men of Pakistan.

***Freedom of Movement (FOM):*** In model 8, of Table 4.28 the multinomial logit estimate for a one unit increase in ability of freedom of movement (FOM) the multinomial log-odds for preferring in both cases worsen and same familial life would be expected to decrease by 1.83 units and 0.98 respectively, given the other variables are held constant. It means changes in the freedom of movement (FOM) the less likely to worsen and same familial life than to improve, based on negatively significant at 1 percent ( $p < 0.01$ ) respectively, parameter established. This means as the freedom of movement (FOM) increases worsen and same familial life decreases than to improve. This shows a strong relation between freedom of movement (FOM) and familial life improvement (FLI). Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between freedom of movement (FOM) and women's familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between freedom of movement (FOM) and women's familial life improvement (FLI) is accepted and postulates strong evidence as the expectation of the

quality of life theory III. The results of the present research are in line with Nessa, (2011); Yasmeen and Karim (2014).

***Political Socio-cultural Awareness (PSA):*** In the model 8 of Table 4.28 the multinomial logit estimate for a one unit increase in the ability of political socio-cultural awareness (PSA) the multinomial log-odds for preferring the in the case of worsen familial life relative to improve familial life, found to be insignificant. While in the case of same familial life than to improve the political socio-cultural awareness (PSA) multinomial log-odds for preferring would be expected to decrease by 1.70 units based on negative and significant at 1 percent ( $p < 0.01$ ) parameter established given the other variables are held constant. It means changes in the political socio-cultural awareness (PSA) the less likely to same familial life than to improve. This means as the political socio-cultural awareness (PSA) increases same familial life improvement decreases relative to improve. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between political socio-cultural awareness (PSA) and women familial life improvement (FLI) and provides strong evidence in support of the quality of life theory III. This finding is consistent with the previous researches such as Isran and Isran (2012); Bhattacharya (2014).

***Age (AGE):*** In model 8, of Table 4.28 the multinomial logit estimate for a one unit increase in years of age (AGE) the multinomial log-odds for preferring in both cases worsen and



same familial life would be expected to increase by 0.51 units and 1.10 respectively, given the other variables are held constant. It means changes in the years of age (AGE) the less likely to worsen and same familial life than to improve, based on positively significant at 10 percent ( $p < 0.10$ ) and 1 percent ( $p < 0.01$ ) respectively, parameter established. This means that as the years of age (AGE) increases worsen and same familial life increases relative to improve familial life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between age (AGE) and women's familial life improvement (FLI) is accepted and contradicts the evidence of the quality of life theory III. The results of the study showed that there is a positive relation between age (AGE) and worsen and same familial life relative to improve familial life improvement (FLI). The reason is that as age (AGE) increases familial life improvement (FLI) decreases due to the burden of work. As women age, she becomes less mobile to manage both outside and inside work and her contribution in familial life reduces. That's why as the age increases worsen and same familial life increase relative to improve familial life.

**Education (EDU):** In model 8 in Table 4.28 results obtained of the parameters from the multinomial logit model estimates for preferring in respect of education (EDU) the multinomial log-odds for preferring in both cases of same and worsen improve familial life would be expected to increase by 0.52 and 1.08 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly positive in the model 8, given the other variables are held constant. This means that as the education (EDU) increases the

worsen and same familial life also increases relative to improve familial life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between education (EDU) and women familial life improvement (FLI) is thereby supported. It is clear from the above mentioned result that as the education (EDU) increases the worsen and same familial life also increases relative to improve familial life. The main fact behind this is that women in Pakistan are considered as not worthy and wise. So, her education did not affect the familial life improvement (FLI).

**Family Size (FS):** In model 8 in Table 4.28 results obtained of the parameters from the multinomial logit model estimate, the multinomial log-odds for preferring in case of same familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of worsen familial life of model 8, from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in case of worsen familial life would be expected to decrease by 0.86 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly negative in the model 8, given the other variables are held constant. This means that as the family size (FS) increases worsen familial life decreases relative to improve familial life. This finding showed the strong evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between family size (FS) and women familial life improvement (FLI) is thereby supported. This finding is supported by previous researches such as Parveen (2007); Naeem *et al.*, (2014).

**Marital Status (MS):** In accordance with expected prediction, that the both coefficients of marital status (MS) of model 8, from the multinomial logit model estimated that for a change in marital status (MS) the multinomial log-odds for preferring in both cases worsen familial life and same familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. It means that the more difference in the marital status (MS), the less likely to be worsen as well as same familial life as compare to base category improve familial life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between marital status (MS) and women's familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's familial life improvement (FLI) is not supported. The result contradicts the quality of life theory III. That focused on the impact of marital status (MS) on familial life improvement (FLI) relative to improve. So, the women borrowers of Pakistan have no effect on familial life improvement (FLI) due to their low status in the Pakistani society.

**Personal Annual Income (PAI):** In model 8 in Table 4.28 results obtained of the parameters from the multinomial logit model estimates in respect of personal annual income (PAI) the multinomial log-odds for preferring in case of worsen familial life relative to improve familial life, found to be insignificant, given the other variables are held constant. On the other hand, in the case of same familial life of model 8, from the multinomial logit model estimates in respect of personal annual income (PAI) the multinomial log-odds for preferring in case of same familial life would be expected to decrease by 0.94 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve familial life, found to be significantly negative in the model 7, given the other variables are held constant. This means that as the personal annual income (PAI) increases the same familial life decreases relative to improve familial life. This finding showed the strong evidence in support of quality of life theory III. Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women familial life improvement (FLI). Therefore, the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women familial life improvement (FLI) is thereby supported. This finding is in line with the previous researches such as Naeem, *et al.*, (2014); Ali, Ali and Subhan (2015).

#### **4.14.3.2 Marginal Effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. Thus, the marginal effects estimate of model 8 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), economic decision making (EDM), political socio-cultural awareness (PSA), age (AGE), education (EDU), family size (FS) and personal annual

income (PAI) found to be significant while loan size (LS), freedom of movement (FOM) and marital status (MS) were insignificant correspondingly.

**Loan Duration (LD):** The marginal effects revealed that as one unit increase in loan duration (LD) then the probability in the case of same familial life relative to improve familial life will decrease 14.5 percent found to be significant, in model 8, keeping, all other variables constant. This means that increase in the loan duration (LD) improves the familial life of women borrowers of Pakistan.

**Training (T):** Similarly, the marginal effects revealed that as one unit increase in training (T) then the probability in the case of same familial life relative to improve familial life will decrease 26 percent found to be significant, in model 8, citrus peribus. This means that increase in the training (T) improves the familial life of women borrowers of Pakistan.

**Loan Size (LS):** In addition, the marginal effects illustrated that as one unit rise in loan size (LS) then the probability of worsen familial life relative to improve familial life will rise 9.5 percent, found to be significant in model 8, even however keeping all other variables remain constant. This means that loan size (LS) has no effect on the improvement of familial life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan size (LS) then the probability of the same familial life relative to improve familial life will decrease by 27.1 percent significantly in model 8, Keeping, all other variables constant. This means

that increase in the loan size (LS) improves the familial life of women borrowers of Pakistan.

***Economic Decision Making (EDM):*** Furthermore, the marginal effects explained that as one unit increase in economic decision making (EDM) than the probability of both worsen and same familial life relative to improve the familial life found to be insignificant, in model 8, even though persisting all other variables remain constant.

***Freedom of Movement (FOM):*** More, the marginal effects showed that as one unit increase in freedom of movement (FOM) than the probability of the case of worsen familial life relative to improve familial life will decrease significantly by 22.3 percent in model 8, ceteris paribus. This means that increase in the freedom of movement (FOM) improves the familial life of women borrowers of Pakistan.

***Political Socio-cultural Awareness (PSA):*** In addition, the marginal effects illustrated that as one unit rise in political socio-cultural awareness (PSA) then the probability of worsen familial life relative to improve familial life will rise 1.69 percent, found to be significant in model 8, even however keeping all other variables remain constant. This means that political socio-cultural awareness (PSA) has no effect on the improvement of familial life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in political socio-cultural awareness (PSA) then the probability of the same familial life relative to improve

familial life will decrease by 42.3 percent significantly in model 8, keeping, all other variables constant. This means that increase in the political socio-cultural awareness (PSA) improves the familial life of women borrowers of Pakistan.

**Age (AGE):** The marginal effects revealed that as one unit increase in age (AGE) than the probability in the case of same familial life relative to improve familial life will increase 22.2 percent found to be significant, in model 8, ceteris paribus. This means that age (AGE) has no effect on the improvement of familial life of women borrowers of Pakistan.

**Education (EDU):** Correspondingly, the marginal effects revealed that as one unit increase in education (EDU) then the probability in the case of same familial life relative to improve familial life will increase 21.6 percent found to be significant, in model 8, keeping, all other variables constant. This means that education (EDU) has no effect on the improvement of familial life of women borrowers of Pakistan.

**Family Size (FS):** More the marginal effects showed that as one unit increase in family size (FS) than the probability of the case of worsen familial life relative to improve familial life will decrease significantly by 14.9 percent in model 8, even though persisting all other variables remain constant. This means that increase in the family size (FS) improves the familial life of women borrowers of Pakistan.

**Marital Status (MS):** Furthermore, the marginal effects explained that as change in marital status (MS) the probability of both worsen and same familial life relative to improve the familial life found to be insignificant, in model 8, *ceteris paribus*.

**Personal Annual Income (PAI):** In addition the marginal effects illustrated that as one unit rise in personal annual income (PAI) than the probability of worsen familial life relative to improve familial life will rise 9 percent, found to be significant in model 8, even however keeping all other variables remain constant. This means that personal annual income (PAI) has no effect on the improvement of familial life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in personal annual income (PAI) then the probability of the same familial life relative to improve familial life will decrease by 23.2 percent significantly in model 8, Keeping, all other variables constant. This means that increase in the personal annual income (PAI) improves the familial life of women borrowers of Pakistan.

#### **4.14.3.3 Odds Ratio Estimates**

Logistic estimates are presented in terms of the logit coefficients or odds ratio. Besides obtaining the coefficients presented in Table 4.28, it is important to obtain the odds ratio. This is because the odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit.



Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So, in the model 8 the odds ratios of loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while marital status (MS) was insignificant correspondingly.

**Loan Duration (LD):** In the model 8, the Table 4.28 explains that if loan duration (LD) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.37 and 0.38 units in that order of relative to improve familial life.

**Training (T):** Further, the model 8, the Table 4.28 explains that if training (T) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.62 and 0.28 units in that order of relative to improve familial life.

**Loan Size (LS):** Moreover, in the model 8, the Table 4.28 explains that if loan size (LS) increase by one point, the odds of preferring in the case of same familial life would be expected to decrease 0.32 units in that order of relative to improve familial life.

**Economic Decision Making (EDM):** Correspondingly, in model 8 the Table 4.28 point out that if economic decision making (EDM) increase by one point, the odds of preferring

in the case of same familial life would be expected to increase 1.91 units relative to improve familial life.

***Freedom of Movement (FOM):*** Moreover, in the model 8, the Table 4.28 explains that if freedom of movement (FOM) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to decrease 0.15 and 0.37 units in that order of relative to improve familial life.

***Political Socio-cultural Awareness (PSA):*** Correspondingly, in model 8 the Table 4.28 point out that if political socio- cultural awareness (PSA) increase by one point, the odds of preferring in the case of same familial life would be expected to decrease 0.18 units relative to improve familial life.

***Age (AGE):*** Similarly, in the model 8, the Table 4.28 explains that if age (AGE) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to increase 1.67 and 3.02 units in that order of relative to improve familial life.

***Education (EDU):*** Also, in the model 8, the Table 4.28 explains that if education (EDU) increase by one point, the odds of preferring in both cases worsen familial life and same familial life would be expected to increase 1.69 and 2.95 units in that order of relative to improve familial life.

**Family Size (FS):** Correspondingly, in model 8 the Table 4.28 point out that if family size (FS) increase by one point, the odds of preferring in the case of worsen familial life would be expected to decrease 0.42 units relative to improve familial life.

**Marital Status (MS):** Consequently, the Table 4.28 shows that if marital status (MS) changes, the odds of preferring in both cases worsen familial life and same familial life found to be insignificant relative to improve familial life in model 8.

**Personal Annual Income (PAI):** Moreover, in model 8 the Table 4.28 point out that if personal annual income (PAI) increase by one point, the odds of preferring in the case of same familial life would be expected to decrease 0.38 units relative to improve familial life.

#### 4.14.3.4 Multinomial Probit Model Estimates

To verify the results of the multinomial logit estimate robustness is checked with the help of Probit model. Table 4.28 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** An assessment of the variable loan duration (LD) in model 8 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compared to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 8.

**Training (T):** An evaluation of the variable training (T) in model 8 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compared to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 8.

**Loan Size (LS):** Similarly, an evaluation of the variable loan size (LS) in model 8 the coefficients identified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be insignificant. While in case of same familial life compared with familial, economic life as base, found to be negatively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

**Economic Decision Making (EDM):** Consequently, an assessment of the variable economic decision making (EDM) in model 8 the coefficients identified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be insignificant. While in case of same familial life compared with familial, economic life as base, found to be positively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

**Freedom of Movement (FOM):** An evaluation of the variable freedom of movement (FOM) in model 8 the coefficient sign posted the very strong similarity with the assessed

results in both cases worsen and same familial life as compared to base category improve familial life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 8.

***Political Socio-cultural Awareness (PSA):*** Accordingly, an evaluation of the variable political socio-cultural awareness (PSA) in model 8 the coefficients specified the slight robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be positively significant. While in case of same familial life compared with improved familial life as base, found to be negatively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

***Age (AGE):*** An evaluation of the variable age (AGE) in model 8 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly positive. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 8.

***Education (EDU):*** An estimation of the variable education (EDU) in model 8 the coefficient sign posted the very strong similarity with the assessed results in both cases worsen and same familial life as compare to base category improve familial life found to be significantly positive. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 8.

**Family Size (FS):** Accordingly, an evaluation of the variable family size (FS) in model 8 the coefficients specified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be negatively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

**Marital Status (MS):** Consequently, an evaluation of the variable marital status (MS) in model 8 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same familial life compared with improved familial life as base, found to be insignificant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

**Personal Annual Income (PAI):** Similarly, an evaluation of the variable personal annual income (PAI) in model 8 the coefficients identified the high robust similarity with the evaluated results in the case of worsen familial life compared with improved familial life as base, found to be insignificant. While in case of same familial life compared with familial life as base, found to be negatively significant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 8.

Consequently, it is clear from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining familial life of the women borrowers of Pakistan. While the findings of the dimensions of personal empowerment have also a significant relationship with familial life. Moreover,

in case of demographic variables age, education, family size and personal annual income have significant relationship with familial life. In contrast, marital status has no effect on the familial life. So, it is evident from the result of the study that not only microcredit played important role in improving familial life, but aggregate personal empowerment has also an important determinant of familial life. Now the present research further examined the impact of the three dimensions of the aggregate of the personal empowerment with familial life, which are as follows.

#### **4.15 Effect Microcredit and Aggregate of Personal Empowerment (PEagg) on Household Life Improvement (Model 9)**

The current research analyzed the effect of microcredit (LD, T, LS) and aggregate personal empowerment (PEagg) on household life improvement (HHLI) in model 9 respectively. The multinomial logit model was used to examine the effect of age, education, marital status, family size, personal annual income, loan duration, training, loan size and aggregate of personal empowerment on women borrower's household life improvement. Later, the results discuss the estimation results of the multinomial probit model to determine whether the results are robust to different estimation multinomial probit model.

##### **4.15.1 Tests for Model Fit (Model 9)**

The results of model fit tests are reported in Table 4.29, which shows the “tests for goodness of fit” model 9.

Table 4.29  
*Tests for Goodness of Fit (Model 9)*

<b>Tests</b>	<b>Results (Model 9)</b>
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.1932
Percentage of Correct Prediction	PCP= 83.75%

Source: "Survey, 2016 computed using STATA Version 13".

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 169.99 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests the hypothesis that all parameters are simultaneously equal to zero. Table 4.29 shows that the Wald chi-square test statistic of 113.42 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.29, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### **4.15.2 Test for Model Specification (Model 9)**

Before we estimate the model, to check whether the model specification the Independent Irrelevant Alternative (IIA) assumption. The independent irrelevant alternative (IIA) test



is often used to test model specification for the multinomial model. The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. Table 4.30 presents the results of the Independent Irrelevant Alternative (IIA) assumption test and shows that overall the model is statistically significant as the Prob >  $\chi^2 = 0.0000$ .

Table 4.30

*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model9)*

<b>Full sample Model 9</b>				
Omitted	Chi-square	df	P> $\chi^2$	Evidence
1 Worsen HHLI	24.271	10	0.007	Against Ho
2 Same HHLI	5.584	10	0.849	For Ho
3 Improved HHLI	-10.192	10	1.000	For Ho

Source: "Survey, 2016 computed using STATA Version 13".

The statistical evidence in Table 4.30 indicates the chi square of the "Improved household life" has negative sign. On the base of the studies of Cheng & Long (2007) and McFadden & Zarembka, (1974) the negative value of chi-square does not indicate a violation of IIA assumption. Thus, the evidence of the case 3 are for Ho and therefore fail to reject the null hypothesis. Therefore, the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.15.3 The Impact of Microcredit and Aggregate of Personal Empowerment (PEagg) on Household Life Improvement (Model 9).**

The present study analyzed the multinomial logit model to examine the effect of microcredit (MC) and aggregate personal empowerment (PEagg) on household life improvement (HHLI) in model 9. Later, probit model is discussed to check the robustness of logit model. The results are given in the Table 4.31.

Table 4.31

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Household Life Improvement (Full Sample of Model 9)*

		Household Life Improvement (Model 9)								
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen HHLI</i>		<i>Same HHLI</i>		<i>Worsen HHLI</i>		<i>Same HHLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	-7.825***	-	4.274**	-	0.0003	-3.36	71.85	1.99	6.279***	9.955***
LD	0.657*	0.170***	-0.0811	-0.122*	1.930*	1.77	0.922	-0.23	0.4843*	-0.6106**
T	0.394*	0.178***	-0.540***	-0.190***	1.482*	1.85	0.582***	-2.69	0.3245**	-0.7608***
LS	0.519*	0.242***	-0.757***	-0.261***	1.681	1.90	0.469***	-2.92	0.4237**	-1.0475***
PEagg	0.798**	0.338***	-0.942***	-0.349***	2.222	2.35	0.389***	-2.62	0.7541***	-1.3766***
AGE	-0.445*	-0.186***	0.5115*	0.191***	0.640*	-1.79	1.667**	2.17	-0.3336*	0.7557***
EDU	-0.214	0.134***	0.531**	0.160***	0.807	-1.20	1.702**	2.45	-0.1638	0.5937***
FS	1.117***	0.122	0.929***	0.046	3.057***	4.04	2.533***	2.85	0.8275***	0.1517
MS	0.023	-0.004	0.067	0.012	1.023	0.09	1.069	0.25	0.0303	0.0377
PAI	0.0487	0.129***	-0.755***	-0.187***	1.049	0.32	0.469***	-3.52	0.0489	-0.6602***
LR $\chi^2$ (18)	1690.99		Log likelihood		-336.04463		Number of observations		400	
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.1932					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HHLI is the base outcome.

#### 4.15.3.1 Multinomial Logit Estimates

In the present study microcredit is measured in the form of loan duration (LD), loan size (LS) and training (T). Similarly, personal empowerment is measured as an aggregate of all its dimensions to check the impact of all the above mentioned variables on the dimension of quality of life that is a household life improvement (HHLI). Now, the present study, discuss them one by one.

***Loan Duration (LD):*** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 9, the multinomial logit model estimated that for a one unit increase in the months of the loan duration (LD) the multinomial log-odds for preferring in case of same household life relative to improve household life, found to be insignificant given the other variables are held constant. In contrast, in case of the worsen household life, it would be more likely to increase 0.65 relative to improve household life found to be positively significant at 10 percent ( $p < 0.10$ ), given the other variables are held constant. This means as the loan duration (LD) increases worsen household life as compared to improve household life as a base category also increases. This shows that as the loan duration of women borrowers of Pakistan increases their worsen household life increases.

The finding evidenced that the loan duration (LD) has a relation with household life improvement (HHLI) as the loan duration increases worsen household life increases. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and household life improvement (HHLI).

Thus the significance of worsen household life contradicts the prediction of the quality of life theory III. This focused that the loan duration of women borrowers positively increases improve household life. In this case it is against with this concept. The above mentioned results emphasized that with the increase in loan duration worsen household increases. There are many factors that involved such as the duration of the loan increases, then the borrowers have to pay high interest rate, greater interest cost, poor household and uncertain inflation. All these factors make household life worsen.

**Training (T):** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in days of training (T) the multinomial log-odds for preferring in the case of worsen household life would be expected to increase by 0.39 unit given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their worsen household life increases based on positively significant at 10 percent ( $p < 0.10$ ) parameter established. In contrast, in the case of same household life would be expected to decrease by 0.54 unit given the other variables are held constant.

Which shows that as the training (T) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means that as the training increases worsen household life increases, while training have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between (T) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a

relationship between (T) and women's household life improvement (HHLI) is supported by many researches such as Karlan and Valdivia (2011); Valdivia (2013). Thus, it is evident from the above mentioned results that as training (T) increases worsen household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen household life and training (T). Consequently, in case of same household life, training has a negative effect, as the training increases same household life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training and improve household life.

**Loan Size (LS):** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in days of loan size (LS) the multinomial log-odds for preferring in the case of worsen household life would be expected to increase by 0.51 unit given the other variables are held constant. Which shows that as the loan size (LS) of women borrowers of Pakistan increases, their worsen household life increases based on positively significant at 10 percent ( $p < 0.10$ ) parameter established. In contrast, in the case of same household life would be expected to decrease by 0.75 unit given the other variables are held constant.

Which shows that as the loan size (LS) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means that as the loan size (LS) increases worsen household life increases, while loan size (LS) have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and

women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between loan size (LS) and women's household life improvement (HHLI) is supported by many researches such as Teng Prien, Mao, and Leng (2011); Rudrabatla, Roy and Kumar (2015). Thus, it is evident from the above mentioned results that as loan size (LS) increases worsen household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen household life and loan size (LS). Consequently, in case of same household life, loan size has a negative effect, as the loan size (LS) increases same household life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of loan size and improve household life.

***Aggregate Personal Empowerment (PEagg):*** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in aggregate personal empowerment (PEagg) the multinomial log-odds for preferring in the case of worsen household life would be expected to increase by 0.79 unit given the other variables are held constant. Which shows that as the aggregate personal empowerment (PEagg) of women borrowers of Pakistan increases, their worsen household life increases based on positively significant at 5 percent ( $p < 0.05$ ) parameter established. In contrast, in the case of same household life would be expected to decrease by 0.94 unit given the other variables are held constant. Which shows that as the aggregate personal empowerment (PEagg) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established.

This means that as the aggregate personal empowerment (PEagg) increases worsen household life increases, while aggregate personal empowerment (PEagg) have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between aggregate personal empowerment (PEagg) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between aggregate personal empowerment (PEagg) and women's household life improvement (HHLI) is supported by many researches such as Clark (1988); Boyd (1999). So, it is evident from the above mentioned results that as aggregate personal empowerment (PEagg) increases worsen household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen household life and aggregate personal empowerment (PEagg).

Consequently, in case of same household life, aggregate personal empowerment (PEagg) has a negative effect, as the aggregate personal empowerment (PEagg) increases same household life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of aggregate personal empowerment (PEagg) and improve household life.

**Age (AGE):** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in years of age (AGE) the multinomial log-odds for preferring in the case of worsen household life would be expected to decrease by 0.44 unit given the other variables are held constant. Which shows that as the age (AGE) of women borrowers of Pakistan

increases, their worsen household life decreases based on negatively significant at 10 percent ( $p < 0.10$ ) parameter established. This means that as the age (AGE) increases worsen household life decreases, while age has a positive effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's household life improvement (HLLI). Therefore, the alternative hypothesis which proposed there is a relationship between age (AGE) and women's household life improvement (HLLI) is supported by many researches such as Jafree and Ahmad (2013); Charansarn (2014).

In contrast, in the case of same household life would be expected to increase by 0.51 unit given the other variables are held constant. Which shows that as the age (AGE) of women borrowers of Pakistan increases, their same household life increases based on positively significant at 10 percent ( $p < 0.10$ ) parameter established. This means that as the age (AGE) increases worsen household life decreases, while age has a positive effect on same household life relative to improve household life.

So, it is evident from the above mentioned results that as age (AGE) increases same household life improvement (HLLI) increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between same household life, as the age (AGE) increases same household life increases. The theory emphasis on the positive relation of age (AGE) and improve household life. The logic behind the same household



life relative to improve household life is that as the age increases their participation in household life improvement (HHLI) decreases.

**Education (EDU):** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in years of education (EDU) the multinomial log-odds for preferring in the case of worsen household life found to be insignificant In contrast, in the case of same household life would be expected to increase by 0.53 units given the other variables are held constant. Which shows that as the education (EDU) of women borrowers of Pakistan increases, their same household life increases based on positively significant at 5 percent ( $p < 0.05$ ) parameter established. This means that as the education increases same household life decreases, education has a positive effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between (EDU) and women's household life improvement (HHLI).

So, it is evident from the above mentioned results that as education (EDU) increases same household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between same household life, but in this case as the education (EDU) increases same household life improvement (HHLI) increases. The theory emphasis on the positive relation of education (EDU) and improve household life. The logic behind the same household life relative to improve household life is that due to

the dominance of males in Pakistani society, some husbands feel complex with the education of their wives. They pressurize them in household life and this is the reason that women's education did not increase household life improvement (HHLI).

**Family Size (FS):** In model 9 in Table 4.31 results obtained of the parameters from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in both cases of same and worsen improve household life would be expected to increase by 1.11 and 0.92 units at 1 percent ( $p < 0.01$ ), respectively, relative to improve household life, found to be significantly positive in the model 9, given the other variables are held constant. This means that as the family size (FS) increases the worsen and same household life also increases relative to improve familial life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between family size (FS) and women's household life improvement (HHLI) is thereby supported. It is clear from the above mentioned result that as the family size (FS) increases the worsen and same household life also increases relative to improve household life. The main fact behind this is that in Pakistan as the family size (FS) increases, it is difficult for a one bread winner to manage large family size with small finance.

**Marital Status (MS):** In accordance with expected prediction, that the both coefficients of (MS) of model 9, from the multinomial logit model estimated that for a change in marital status (MS) the multinomial log-odds for preferring in both cases worsen household life and same household life relative to improve household life, found to be insignificant, given the other variables are held constant. It means that the more the difference in the marital status (MS), the less likely to be worsen as well as same household life as compare to base category improve household life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between marital status (MS) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's household life (HHLI) is not supported. The result contradicts the quality of life theory III. That focused on the impact of Marital Status (MS) on household life improvement (HHLI) relative to improve. So, the women borrowers of Pakistan have no effect on household life improvement (HHLI) due to their low status in the Pakistani society.

**Personal Annual Income (PAI):** In the model 9 of Table 4.31 the multinomial logit estimate for a one unit increase in personal annual income (PAI) the multinomial log-odds for preferring in the case of worsen household life found to be insignificant. In contrast, in the case of same household life would be expected to decrease by 0.75 unit given the other variables are held constant. Which shows that as the personal annual income (PAI) of women borrowers of Pakistan increases, their same household life decreases based on

negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means personal annual income (PAI) have a negative effect on same household life relative to improve household life.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women's household life improvement (HHLI). Therefore the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women's household life is supported by many researches such as Al-Mamun and Adaikalam (2011); Gedion, Oyugi and Munyithya (2015). So, it is evident from the above mentioned results that as personal annual income (PAI) increases same household life improvement (HHLI) same household life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of personal annual income and improve household life.

#### **4.15.3.2 The Marginal Effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. Thus, the marginal effects estimate of model 9 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS) aggregate personal empowerment (PEagg), age (AGE), education (EDU), and personal annual income (PAI) found to be significant while family size (FS) and marital status (MS) were insignificant correspondingly.

**Loan Duration (LD):** The marginal effects illustrated that as one unit rise in loan duration (LD) then the probability of worsen household life relative to improve household life will rise 17 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that loan duration (LD) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan duration (LD) then the probability of the same household life relative to improve household life will decrease by 12.2 percent significantly in model 9, keeping, all other variables constant. This means that increase in the loan duration (LD) improves the household life of women borrowers of Pakistan.

**Training (T):** Moreover, the marginal effects illustrated that as one unit rise in training (T) then the probability of worsen household life relative to improve household life will rise 17.8 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that training (T) has no effect on the improvement of household life of women borrowers of Pakistan.

On the other hand , the marginal effects portrayed that as one unit increase in (T) then the probability of the same household life relative to improve household life will decrease by 19 percent significantly in model 9, citrus peribus. This means that increase in the training (T) improves the household life of women borrowers of Pakistan.

***Loan Size (LS):*** Furthermore, the marginal effects illustrated that as one unit rise in loan size (LS) then the probability of worsen household life relative to improve household life will rise 24.2 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that loan size (LS) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan size (LS) then the probability of the same household life relative to improve household life will decrease by 26.1 percent significantly in model 9, keeping, all other variables constant. This means that increase in the loan size (LS) improves the household life of women borrowers of Pakistan.

***Aggregate Personal Empowerment (PEagg):*** Additionally, the marginal effects illustrated that as one unit rise in aggregate personal empowerment (PEagg) then the probability of worsen household life relative to improve household life will increase 33.8 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that aggregate personal empowerment (PEagg) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in aggregate personal empowerment (PEagg) then the probability of the same household life relative to improve household life will decrease by 34.9 percent significantly in model 9, citrus peribus. This

means that increase in the aggregate personal empowerment (PEagg) improves the household life of women borrowers of Pakistan.

**Age (AGE):** Moreover, the marginal effects illustrated that as one unit rise in age (AGE) then the probability of worsen household life relative to improve household life will decrease 18.6 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that increase in the age (AGE) improves the household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in age (AGE) then the probability of the same household life relative to improve household life will increase by 19.1 percent significantly in model 9, keeping, all other variables constant. This means that age (AGE) has no effect on the improvement of household life of women borrowers of Pakistan.

**Education (EDU):** Furthermore, the marginal effects illustrated that as one unit rise in education (EDU) then the probability of both cases worsen and same household life relative to improve household life will increase 13.4 percent, and 16 percent found to be significant in model 9, even however keeping all other variables remain constant. This means that education (EDU) has no effect on the improvement of household life of women borrowers of Pakistan.

**Family Size (FS):** Besides the marginal effects explained that as one unit increase in family size (FS) then the probability of both worsen and same household life relative to improve household life found to be insignificant, in model 9, *ceteris paribus*.

**Marital Status (MS):** Furthermore, the marginal effects explained that as changes in marital status (MS) the probability of both worsen and same household life relative to improve household life found to be insignificant in model 9, even however keeping all other variables remain constant.

**Personal Annual Income (PAI):** Additionally, The marginal effects illustrated that as one unit rise in personal annual income (PAI) then the probability of worsen household life relative to improve household life will rise 12.9 percent, found to be significant in model 9, even however keeping all other variables remain constant. This means that personal annual income (PAI) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in personal annual income (PAI) then the probability of the same household life relative to improve household life will decrease by 18.7 percent significantly in model 9, *ceteris paribus*. This means that increase in the personal annual income (PAI) improves the household life of women borrowers of Pakistan.



#### 4.15.3.3 Odds Ratio Estimates

Logistic estimates are presented in terms of the logit coefficients or odds ratio. Besides obtaining the coefficients presented in Table 4.31, it is important to obtain the odds ratio. This is because the odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So, in the model 9 the odds ratios of loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PEagg), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while marital status (MS) was insignificant correspondingly.

***Loan Duration (LD):*** In model 9 the Table 4.31 point out that if loan duration (LD) increase by one point, the odds of preferring in the case of worsen household life would be expected to increase 2.66 units relative to improve household life.

***Training (T):*** Additionally, in model 9 the Table 4.31 explains that if training (T) increase by one point, the odds of preferring in the case of worsen household life would be expected to increase 1.48 units relative to improve household life. While, in the case of same household life would be expected to decrease 0.58 units relative to improve household life.

**Loan Size (LS):** Moreover, in the model 9, the Table 4.31 explains that if loan size (LS) increase by one point, the odds of preferring in the case same household life would be expected to decrease 0.58 units in that order of relative to improve household life.

**Aggregate Personal Empowerment (PEagg):** Moreover, in the model 9, the Table 4.31 explains that if aggregate personal empowerment (PEagg) increase by one point, the odds of preferring in the case of same household life would be expected to decrease 0.38 units in that order of relative to improve household life.

**Age (AGE):** Additionally, in model 9 the Table 4.31 explains that if age (AGE) increase by one point, the odds of preferring in the case of worsen household life would be expected to decrease 0.64 units relative to improve household life. While, in the case of same household life would be expected to increase 1.66 units relative to improve household life.

**Education (EDU):** Moreover, in the model 9, the Table 4.31 explains that if education (EDU) increase by one point, the odds of preferring in the case of same household life would be expected to increase 1.70 units in that order of relative to improve household life.

**Family Size (FS):** Additionally, in model 9 the Table 4.31 explains that if family (FS) increase by one point, the odds of preferring in both cases of worsen and same household life would be expected to increase 3.05 and 2.53 units relative to improve household life.

**Marital Status (MS):** Consequently, the Table 4.31 shows that if marital status (MS) of respondents change, the odds of preferring in both cases worsen household life and same household life found to be insignificant relative to improve household life in model 9.

**Personal Annual Income (PAI):** Moreover, in the model 9, the Table 4.31 explains that if amount of personal annual income (PAI) increase by one point, the odds of preferring in the case of same household life would be expected to decrease 0.46 units in that order of relative to improve household life.

#### **4.15.3.4 Multinomial Probit Model Estimates**

To verify the results of the multinomial logit estimate robustness is checked, it also estimated by using the multinomial probit model. Table 4.31 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** An assessment of the variable loan duration (LD) in Model 9 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be significantly positive. In contrast, in the case of same household life the slight similarity with the assessed results as compared to base category improve household life found to be significantly negative in model 9.

**Training (T):** An assessment of the variable training (T) in model 9 the coefficient sign posted the very strong similarity with the assessed results in both cases of worsen and same household life as compared to base category improve household life found to be

significantly positive and negative respectively. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

***Loan Size (LS):*** An assessment of the variable loan size (LS) in model 9 the coefficient sign posted the very strong similarity with the assessed results in both cases of worsen and same household life as compared to base category improve household life found to be significantly positive and negative respectively. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

***Aggregate Personal Empowerment (PEagg):*** An assessment of the variable Aggregate personal empowerment (PEagg) in model 9 the coefficient sign posted the very strong similarity with the assessed results in both cases of worsen and same household life as compare to base category improve household life found to be significantly positive and negative correspondingly. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

***Age (AGE):*** An evaluation of the variable age (AGE) in model 9 the coefficient sign posted the strong similarity with the assessed results in both cases of worsen and same household life as compared to base category improve household life found to be significantly negative and positive correspondingly. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

**Education (EDU):** An examination of the variable education (EDU) in model 9 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life the high similarity with the assessed results as compare to base category improve household life found to be significantly positive. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

**Family Size (FS):** An assessment of the variable family size (FS) in model 9 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be significantly positive. In contrast, in the case of same household life with the assessed results as compare to base category improve household life found to be insignificant. Thus, the results highlighted that the results of worsen household life is consistent with the results of the multinomial logit model 9.

**Marital Status (MS):** Consequently, an evaluation of the variable marital status (MS) in model 9 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same household life compared with improved household life as base, found to be insignificant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 9.

**Personal Annual Income (PAI):** Similarly, an examination of the variable personal annual income (PAI) in model 9 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life the high similarity with the assessed results as compare to base category improve household life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 9.

Thus, it is obvious from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining household life of the women borrowers of Pakistan. While the findings of the aggregate personal empowerment have also a significant relationship with household life. Moreover, in case of demographic variables age, education, family size and personal annual income has significant relationship with household life. In contrast, marital status has no effect on the household life. Thus, it is evident from the result of the study that not only microcredit played important role in improving household life, but aggregate personal empowerment has also an important determinant of household life. Now the present research further examined the impact of the three dimensions of the aggregate of the personal empowerment with household life, which are as follows.

#### 4.16 Effect of Microcredit and dimensions of Personal empowerment on Household Life Improvement (Model 10)

The present study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment on household life improvement (HHLI) in model 10, by using the multinomial logit model, respectively. The multinomial logit model was used to examine the effect of demographic variables, microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM, PSA) on household life improvement. Later, probit model is discussed to check the robustness of logit model.

##### 4.16.1 Tests for Model Fit (Model 10)

The results of model fit tests are reported in Table 4.32, which shows the “tests for goodness of fit” model 10.

Table 4.32  
*Tests for Goodness of Fit (Model 10)*

Tests	Results (Model 10)
Likelihood Ratio $\chi^2$ (6)	p-value=0.0000
Wald chi-square test	p-value=0.0000
Pseudo R <sup>2</sup>	0.2288
Percentage of Correct Prediction	PCP= 83.75%

Source: “Survey, 2016 computed using STATA Version 13”.

The model's overall goodness of fit is tested using the likelihood ratio  $\chi^2$ . The model's likelihood ratio  $\chi^2$  statistic of 190.57 is statistically significant at 1 percent indicating the goodness of fit of the whole model. Just like the likelihood ratio  $\chi^2$ , the Wald test also tests

the hypothesis that all parameters are simultaneously equal to zero. Table 4.32 shows that the Wald chi-square test statistic of 120.95 is significant at 1 percent significance level (p-value = 0.0000), thus we reject the hypothesis that all parameters are simultaneously equal to zero. This indicates that at least one of the coefficients in the model has an impact on the dependent variable. As indicated in Table 4.32, the percentage of cases correctly predicted is 83.75 percent. Although, the percentage is not very high and not very low but it considered modest as it also falls within 50 percent and 100 percent suggested by Pampel (2000) for predictive accuracy.

#### 4.16.2 Tests for Model Specification (Model 10)

Before we estimate the model, to check whether the model specification satisfied the Independent Irrelevant Alternative (IIA) assumption. The independent irrelevant alternative (IIA) test is often used to test model specification for the multinomial model. The test is based on the notion that the choice probability of any two alternatives is not affected by the other alternatives. Table 4.33 presents the results of the Independent Irrelevant Alternative (IIA) assumption test and shows that overall the model is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

Table 4.33

*Hausman Tests of Independence of Irrelevant Alternatives (IIA) Tests for MNL (Model 10)*

<b>Full sample Model 10</b>				
Omitted	Chi-square	df	P>chi <sup>2</sup>	Evidence
1 Worsen FLI	12.844	12	0.380	For Ho
2 Same FLI	2.588	12	0.998	For Ho
3 Improved FLI	-2.06	12	1.000	For Ho

Source: "Survey, 2016 computed using STATA Version 13".



The statistical evidence in Table 4.33 indicates the chi square of the “Improved household life” has negative sign. On the base of the studies of Cheng and Long (2007); McFadden and Zarembka, (1974) the negative value of chi-square does not indicate a violation of Independent Irrelevant Alternative (IIA) assumption. Thus, the evidence of the case 3 are for  $H_0$  and therefore fail to reject the null hypothesis. Therefore, the three outcomes of the dependent variables are distinct and this justifies the use of the multinomial logit model.

#### **4.16.3 The Impact of Microcredit and dimensions of Personal empowerment on Household Life Improvement (Model 10)**

The present study fourth objective focused on the impact of microcredit and dimensions of personal empowerment on women borrowers’ household life. Thus the multinomial logit model was used to examine the effect as follows. Later, the study also discussed the estimation results of the marginal effect, odds ratios and multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

The results are shown in Table 4.34 given below.

Table 4.34

*Results of Multinomial Logit, Marginal, Odds Ratio and Probit Model Effect Estimation on Household Life Improvement (Full Sample of Model 10)*

		Household Life Improvement (Model 10)								
Dependent Variable	Multinomial Logit model				Odds Ratio				Probit Model	
Independent Variable	<i>Worsen HHLI</i>		<i>Same HHLI</i>		<i>Worsen HHLI</i>		<i>Same HHLI</i>		<i>Worsen to improve</i>	<i>Same to improve</i>
	Coeff	<i>Marginal</i>	Coeff	<i>Marginal</i>	Odds	Z	Odds	Z	Coeff	Coeff
Cons	-4.862**	-	6.769***	-	0.007	-1.98	871.04	2.78	4.456**	9.691***
LD	0.980*	0.226***	0.024	-0.145***	2.665**	2.51	1.025	0.06	0.764***	0.719***
T	0.466*	0.229***	-0.780***	-0.260***	1.594*	1.95	0.458***	-3.51	0.391**	-0.958***
LS	0.182	0.175***	-1.109***	-0.271***	1.018	0.06	0.329***	-3.54	0.108	-0.965
EDM	-0.733	-0.159**	-0.081	0.093	0.480	-1.64	0.921	-0.19	-0.488	-0.488*
FOM	1.839***	0.299***	0.858*	-0.761	6.292***	3.64	2.360	1.70	1.309***	0.622*
PSA	-0.116	0.254***	-1.824***	-0.423***	0.890	-0.28	0.161***	-4.24	-0.073	-1.384***
AGE	-0.518*	-0.212***	0.589**	0.222***	0.595*	-1.88	1.803**	2.32	-0.393***	0.900***
EDU	-0.529***	-0.210***	0.555**	0.216***	0.589***	-2.65	1.743**	2.30	-0.413***	0.835***
FS	0.866***	0.063	0.907**	0.085	2.379***	3.13	2.479**	2.48	0.644***	0.039
MS	-0.576	-0.402	0.173	0.507	0.943	-0.18	1.188*	0.55	-0.108	0.141
PAI	-0.491	0.141***	-0.992***	-0.232***	0.952	-0.28	0.370***	-3.98	0.004	-0.798***
LR $\chi^2$ (22)	190.57		Log likelihood		-321.2523		Number of observations		400	
Prob > chi <sup>2</sup>	0.0000		Pseudo R <sup>2</sup>		0.2288					

Source: "Survey, 2016 computed using STATA Version 13".

*Note:* Coefficient \*\*\* is significant at the 1 percent ( $p < 0.01$ ), \*\* is significant at the 5 percent ( $p < 0.05$ ) and \* is significant at the 10 percent ( $p < 0.10$ ) level, respectively. Improved HHLI is the base outcome.

#### 4.16.3.1 Multinomial Logit Estimates

The current study analyzed the effect of microcredit (LD, T, LS) and dimensions of personal empowerment (EDM, FOM & PSA) on dimension of quality of life that is household life improvement (HHLI) in model 10 respectively. The multinomial logit model was used to examine the effect of loan duration (LD), training (T), loan size (LS), dimension of personal empowerment that is economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), age(AGE), education (EDU), marital status (MS), family size (FS) and personal annual income (PAI). Later, we also discuss the estimation results of the multinomial probit model to determine whether our results are robust to different estimation multinomial probit model.

***Loan Duration (LD):*** In accordance with expected prediction, that the both coefficients of loan duration (LD) of the model 10, the multinomial logit model estimated that for one unit increase in the months of the loan duration (LD) the multinomial log-odds for preferring in case of same household life relative to improve household life, found to be insignificant given the other variables are held constant. In contrast, in case of the worsen household life, it would be more likely to increase 0.98 relative to improve household life found to be positively significant at 10 percent ( $p < 0.10$ ), given the other variables are held constant. This means as the loan duration (LD) increases worsen household life as compared to improve household life as a base category also increases. This shows that as the loan duration (LD) of women borrowers of Pakistan increases their worsen household life increases.

The finding evidenced that the loan duration (LD) has a relation with household life as the loan duration increases worsen household life increases. Thus, this study found sufficient

evidence to reject the null hypothesis which postulates that there is no relationship between loan duration (LD) and household life improvement (HHLI). Thus the significance of worsen household life contradicts the prediction of the quality of life theory III. This focused that the loan duration (LD) of women borrowers positively improves household life. In this case it is against with this concept.

**Training (T):** In the model 10 of Table 4.34 the multinomial logit estimate for a one unit increase in days of training (T) the multinomial log-odds for preferring in the case of worsen household life would be expected to increase by 0.46 unit given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their worsen household life increases based on positively significant at 10 percent ( $p < 0.10$ ) parameter established. So, it is evident from the above mentioned results that as training (T) increases worsen household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between worsen household life and training (T).

In contrast, in the case of same household life would be expected to decrease by 0.78 unit given the other variables are held constant. Which shows that as the training (T) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means that as the training increases same household life increases, while training have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between training (T) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between training (T) and women's household life improvement (HHLI) is supported by many researches such as Karlan and

Valdivia, (2011); Valdivia, (2013). Consequently, in case of same household life, training has a negative effect, as the training increases household life improves. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of training and improve household life.

**Loan Size (LS):** In the model 10 of Table 4.34 the multinomial logit estimate for a one unit increase in days of loan size (LS) the multinomial log-odds for preferring in the case of worsen household life found to be insignificant. In contrast, in the case of same household life would be expected to decrease by 1.10 unit given the other variables are held constant. Which shows that as the loan size (LS) of women borrowers of Pakistan increases, their household life improves based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means loan size (LS) have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between loan size (LS) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between loan size (LS) and women's household life improvement (HHLI) is supported by many researches such as Saleem, Zaman, Khattak and Qureshi (2011); Al-Mamun, Adaikalam and Wahab (2012). So, it is evident from the above mentioned results that as loan size (LS) increases there is an improvement in household life of women borrowers of Pakistan. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of loan size and improve household life.

**Economic Decision Making (EDM):** In accordance with expected prediction, that the both coefficients of economic decision making (EDM) of model 10, from the multinomial logit model estimated that for one unit increase in economic decision making (EDM) the

multinomial log-odds for preferring in both cases worsen household life and same household life relative to improve household life, found to be insignificant, given the other variables are held constant. It means that the more the economic decision making (EDM), the less likely to be worsen as well as same household life as compare to base category improve household life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between economic decision making (EDM) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between economic decisions making (EDM) and women's household life improvement (HHLI) is not supported. The result contradicts the quality of life theory III that focused on the impact of economic decision making (EDM) on women household life improvement (HHLI). Thus, the women borrowers of Pakistan have no effect of economic decision making (EDM) on household life improvement (HHLI) due to their lack of economic decision making.

***Freedom of Movement (FOM):*** As seen in the Table 4.34, results obtained of the parameters of Model10, from the multinomial logit model estimates for one unit increase in freedom of movement (FOM) the multinomial log-odds for preferring in both cases worsen household life and same household life would be expected to increase 1.8 and 0.8 relative to improve household life respectively, found to be positively significant at 1 percent ( $p < 0.01$ ) and 10 percent ( $p < 0.10$ ) respectively given the other variables are held constant. It shows an increase in the freedom of movement (FOM) the most likely to increase in both worsen and same household life than to improve, based on positive and significant parameter established.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between freedom of movement (FOM) and women household life. Thus the coefficient contradicts the prediction of the quality of life theory III. Hence the logic behind is that there are bound to obey their counterparts even if they do not feel well they are not allowed to go outside for their routine checkup or to consult the doctor. So, this is the main reason that why their worsen and same household life increases. Because they are not free to move.

**Political Socio-cultural Awareness (PSA):** In the model 10 of Table 4.34 the multinomial logit estimate for one unit increase in political socio-cultural awareness (PSA) the multinomial log-odds for preferring in the case of worsen household life found to be insignificant. In contrast, in the case of same household life would be expected to decrease by 1.18 unit given the other variables are held constant. Which shows that as the political socio-cultural awareness (PSA) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means political socio-cultural awareness (PSA) have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between political socio-cultural awareness (PSA) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between political socio-cultural awareness (PSA) and women's household life improvement (HHLI) is supported by many researches such as Shaheed *et al.*, (1998); Khan (2010) So, it is evident from the above mentioned results that as political socio-cultural awareness (PSA) increases same household life decreases. It provides strong evidence in support of the quality of life theory III. The theory emphasis on the positive relation of political socio-cultural awareness (PSA) and improve household life.

**Age (AGE):** In the model 10 of Table 4.34 the multinomial logit estimate for one unit increase in years of age (AGE) the multinomial log-odds for preferring in the case of worsen household life would be expected to decrease by 0.51 unit given the other variables are held constant. Which shows that as the age (AGE) of women borrowers of Pakistan increases, their worsen household life decreases based on negatively significant at 10 percent ( $p < 0.10$ ) parameter established. In contrast, in the case of same household life would be expected to increase by 0.58 unit given the other variables are held constant. Which shows that as the age (AGE) of women borrowers of Pakistan increases, their same household life increases based on positively significant at 5 percent ( $p < 0.05$ ) parameter established. This means that as the age increases worsen household life decreases, while age (AGE) has a positive effect on same household life relative to improve household life.

Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between age (AGE) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between age (AGE) and women's household life improvement (HHLI) is supported by many researches such as Ali, Ali and Subhan (2015). So, it is evident from the above mentioned results that as age (AGE) increases same household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between same household life, as the age (AGE) increases same household life increases. The logic behind the same household life relative to improve household life is that as the age increases their participation in household life improvement decreases.

**Education (EDU):** In the model 9 of Table 4.34 the multinomial logit estimate for a one unit increase in years of education (EDU) the multinomial log-odds for preferring in the case of worsen household life would be expected to decrease by 0.44 unit given the other



variables are held constant. Which shows that as the education (EDU) of women borrowers of Pakistan increases, their worsen household life decreases based on negatively significant at 10 percent ( $p < 0.10$ ) parameter established. This means that as the education increases worsen household life decreases, while education has a positive effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between education (EDU) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between education (EDU) and women's household life improvement (HHLI) is accepted.

In contrast, in the case of same household life would be expected to increase by 0.51 unit given the other variables are held constant. Which shows that as the education (EDU) of women borrowers of Pakistan increases, their same household life increases based on positively significant at 10 percent ( $p < 0.10$ ) parameter established. So, it is evident from the above mentioned results that as education (EDU) increases same household life increases. It contradicts with the quality of life theory III. As, the theory emphasis on the negative effect between same household life, as the education (EDU) increases same household life increases. The theory emphasis on the positive relation of education (EDU) and improve household life. The logic behind the same household life relative to improve household life is that as Pakistani society rather the women is educated but they are bound to follow the dominance of their husbands in every household matter. That's why their education did not affect their household life improvement (HHLI).

**Family Size (FS):** In model 10 in Table 4.34 results obtained of the parameters from the multinomial logit model estimates in respect of family size (FS) the multinomial log-odds for preferring in respect of family size (FS) the multinomial log-odds for preferring in both

cases of same and worsen improve household life would be expected to increase by 0.86 and 0.90 units at 1 percent ( $p < 0.01$ ) and 5 percent ( $p < 0.05$ ), respectively, relative to improve household life, found to be significantly positive in the model 10, given the other variables are held constant. This means that as the family size (FS) increases the worsen and same household life also increases relative to improve household life. This finding showed the contradictory evidence in support of quality of life theory III.

Thus, this study originates sufficient evidence to reject the null hypothesis which postulates that there is no relationship between family size (FS) and women household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between family size (FS) and women household life improvement (HHLI) is thereby supported. It is clear from the above mentioned result that as the family size (FS) increases the worsen and same household life also increases relative to improve household life. The main fact behind this is that in Pakistan, women do not have the right to decide the size of the family due to cultural and spouse pressure, it is very difficult for a one bread winner to manage large family size with small finance. That's why the worsen and same household improvement (HHLI) affect positively on family size (FS).

**Marital Status (MS):** In accordance with expected prediction, that the both coefficients of marital status (MS) of model 10, from the multinomial logit model estimated that for a change in family size (MS) the multinomial log-odds for preferring in both cases worsen household life and same household life relative to improve household life, found to be insignificant, given the other variables are held constant. It means that the change in marital status (MS), the less likely to be worsen as well as same household life as compare to base category improve household life.

Thus, this study found sufficient evidence to accept the null hypothesis which postulates that there is no relationship between marital status (MS) and women's household life improvement (HHLI). Therefore, the alternative hypothesis which proposed there is a relationship between marital status (MS) and women's household life improvement (HHLI) is not supported. The result contradicts the quality of life theory III. That focused on the impact of marital status on household life improvement (HHLI) relative to improve. So, the women borrowers of Pakistan have no effect on household life improvement (HHLI) due to their low status in the Pakistani society.

**Personal Annual Income (PAI):** In the model 10 of Table 4.34 the multinomial logit estimate for one unit increase in personal annual income (PAI) the multinomial log-odds for preferring in the case of worsen household life found to be insignificant. In contrast, in the case of same household life would be expected to decrease by 0.99 unit given the other variables are held constant. Which shows that as the personal annual income (PAI) of women borrowers of Pakistan increases, their same household life decreases based on negatively significant at 1 percent ( $p < 0.01$ ) parameter established. This means personal annual income (PAI) have a negative effect on same household life relative to improve household life. Thus, this study found sufficient evidence to reject the null hypothesis which postulates that there is no relationship between personal annual income (PAI) and women's household life improvement (HLI). Therefore, the alternative hypothesis which proposed there is a relationship between personal annual income (PAI) and women's household life improvement (HHLI) is supported by many researches such as Sheheli (2012); Gedion, Oyugi and Munyithya (2015).

So, it is evident from the above mentioned results that as personal annual income (PAI) increases same household life decreases. It provides strong evidence in support of the

quality of life theory III. The theory emphasis on the positive relation of personal annual income (PAI) and improve household life.

#### **4.16.3.2 Marginal Effect Estimates**

The marginal effects describe the impact of each explanatory variable on the predicted outcome probabilities of choice and rate of increase and decrease. Thus, the marginal effects estimate of model 10 are discussed below. So, in the marginal effects the variables loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), age (AGE), education (EDU), and personal annual income (PAI) found to be significant while family size (FS) and marital status (MS) were insignificant correspondingly.

***Loan Duration (LD):*** The marginal effects illustrated that as one unit rise in loan duration (LD) then the probability of worsen household life relative to improve household life will rise 22.6 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that loan duration (LD) has no effect on the improvement of household life of women borrowers of Pakistan. In contrast, the marginal effects portrayed that one unit increase in loan duration (LD) then the probability of the same household life relative to improve household life will decrease by 14.5 percent significantly in model 10, keeping, all other variables constant. This means that increase in the loan duration (LD) improves the household life of women borrowers of Pakistan.

***Training (T):*** Moreover, the marginal effects illustrated that as one unit rise in training (T) then the probability of worsen household life relative to improve household life will rise 22.9 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that training (T) has no effect on the improvement

of household life of women borrowers of Pakistan. In contrast, the marginal effects portrayed that one unit increase in training (T) than the probability of the same household life relative to improve household life will decrease by 26 percent significantly in model 10, *citrus peribus*. This means that increase in the training (T) improves the household life of women borrowers of Pakistan.

***Loan Size (LS):*** Furthermore, the marginal effects illustrated that as one unit rise in loan size (LS) than the probability of worsen household life relative to improve household life will rise 17.5 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that loan size (LS) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that as one unit increase in loan size (LS) then the probability of the same household life relative to improve household life will decrease by 27.1 percent significantly in model 10, keeping, all other variables constant. This means that increase in the loan size (LS) improves the household life of women borrowers of Pakistan.

***Economic Decision Making (EDM):*** More the marginal effects showed that as one unit increase in economic decision making (EDM) then the probability of the case of worsen household life relative to improve household life will decrease significantly by 15.9 percent in model 10, even though persisting all other variables remain constant. This means that increase in the economic decision making (EDM) improves the household life of women borrowers of Pakistan.

***Freedom of Movement (FOM):*** Moreover, the marginal effects showed that one unit increase in freedom of movement (FOM) then the probability of the case of worsen household life relative to improve household life will increase significantly by 29.9 percent in model 10, *citrus peribus*. This means that freedom of movement (FOM) has no effect on the improvement of household life of women borrowers of Pakistan.

***Political Socio-cultural Awareness (PSA):*** Furthermore, the marginal effects illustrated that one unit rise in political socio-cultural awareness (PSA) then the probability of worsen household life relative to improve household life will rise 25.4 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that political socio-cultural awareness (PSA) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that one unit increase in political socio-cultural awareness (PSA) then the probability of the same household life relative to improve household life will decrease by 42.3 percent significantly in model 10, keeping, all other variables constant. This means that increase in the political socio-cultural awareness (PSA) improves the household life of women borrowers of Pakistan.

***Age (AGE):*** Also, the marginal effects illustrated that one unit rise in age (AGE) then the probability of worsen household life relative to improve household life will decrease 21.2 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that increase in the age (AGE) improves the household life of women borrowers of Pakistan. In contrast, the marginal effects portrayed that one unit increase in age (AGE) than the probability of the same household life relative to improve household life will increase by 22.2 percent significantly in model 10, *citrus peribus*. This

means that age (AGE) has no effect on the improvement of household life of women borrowers of Pakistan.

**Education (EDU):** Similarly, the marginal effects illustrated that as one unit rise in education (EDU) than the probability of worsen household life relative to improve household life will decrease 21 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that increase in the education (EDU) improves the household life of women borrowers of Pakistan. In contrast, the marginal effects portrayed that one unit increase in education (EDU) then the probability of the same household life relative to improve household life will increase by 21.6 percent significantly in model 10, *ceteris paribus*. This means that education (EDU) has no effect on the improvement of household life of women borrowers of Pakistan.

**Family Size (FS):** Besides the marginal effects explained that one unit increase in family size (FS) than the probability of both worsen and same household life relative to improve household life found to be insignificant, in model 10, keeping all other variables remain constant.

**Marital Status (MS):** Furthermore, the marginal effects explained that as marital status (MS) change the probability of both worsen and same household life relative to improve household life found to be insignificant, in model 10, *ceteris paribus*.

**Personal Annual Income (PAI):** Also the marginal effects illustrated that one unit rise in personal annual income (PAI) than the probability of worsen household life relative to improve household life will rise 14.1 percent, found to be significant in model 10, even however keeping all other variables remain constant. This means that personal annual

income (PAI) has no effect on the improvement of household life of women borrowers of Pakistan.

In contrast, the marginal effects portrayed that one unit increase in personal annual income (PAI) then the probability of the same household life relative to improve household life will decrease by 23.2 percent significantly in model 10, keeping, all other variables constant. This means that increase in the personal annual income (PAI) improves the household life of women borrowers of Pakistan.

#### **4.16.3.3 Odds Ratio Estimates**

Logistic estimates are presented in terms of the logit coefficients or odds ratio. Besides obtaining the coefficients presented in Table 4.33, it is important to obtain the odds ratio. This is because the odds ratio presents an easier alternative to interpreting the estimates. This is because it tells how many times the likelihood of occurrence relative to the non-occurrence will increase or decrease when the explanatory variable changes by one unit. Therefore, logistic regression analysis indicates how the odds change when a particular explanatory variable change. So, in the model 10 the odds ratios of loan duration (LD), training (T), loan size (LS), economic decision making (EDM), freedom of movement (FOM), political socio-cultural awareness (PSA), education (EDU), family size (FS) and personal annual income (PAI) found to be significant while marital status (MS) was insignificant correspondingly.

***Loan Duration (LD):*** Correspondingly, in model 10 the Table 4.34 point out that if loan duration (LD) increase by one point, the odds of preferring in the case of worsen household life would be expected to increase 2.66 units relative to improve household life.



**Training (T):** Additionally, in model 10 the Table 4.34 explains that if training (T) increase by one point, the odds of preferring in the case of worsen household life would be expected to increase 1.59 units relative to improve household life. While, in the case of same household life would be expected to decrease 0.45 units relative to improve household life.

**Loan Size (LS):** Moreover, in the model 10, the Table 4.34 explains that if loan size (LS) increase by one point, the odds of preferring in the case of same household life would be expected to decrease 0.32 units in that order of relative to improve household life.

**Economic Decision Making (EDM):** Consequently, the Table 4.34 shows that if economic decision making (EDM) increase by one point, the odds of preferring in both cases worsen household life and same household life found to be insignificant relative to improve household life in model 10.

**Freedom of Movement (FOM):** Correspondingly, in model 10 the Table 4.34 point out that if freedom of movement (FOM) increase by one point, the odds of preferring in the case of worsen household life would be expected to increase 6.29 units relative to improve household life.

**Political Socio-cultural Awareness (PSA):** Moreover, in the model 10, the Table 4.34 explains that if political socio-cultural awareness (PSA) increase by one point, the odds of preferring in the case of same household life would be expected to decrease 0.16 units in that order of relative to improve household life.

**Age (AGE):** Additionally, in model 10 the Table 4.34 explains that if age (AGE) increase by one point, the odds of preferring in the case of worsen household life would be expected

to decrease 0.59 units relative to improve household life. While, in the case of same household life would be expected to increase 1.80 units relative to improve household life.

**Education (EDU):** Similarly, in model 10 the Table 4.34 explains that if education (EDU) increase by one point, the odds of preferring in the case of worsen household life would be expected to decrease 0.58 units relative to improve household life. While, in the case of same household life would be expected to increase 1.74 units relative to improve household life.

**Family Size (FS):** Additionally, in model 10 the Table 4.34 explains that if family size (FS) increase by one point, the odds of preferring in both cases of worsen and same household life would be expected to increase 2.37 and 2.47 units relative to improve household life.

**Marital Status (MS):** Moreover, in the model 10, the Table 4.34 explains that if marital status (MS) changes, the odds of preferring in the case of same household life would be expected to increase 1.18 units in that order of relative to improve household life.

**Personal Annual Income (PAI):** Also, in the model 10, the Table 4.34 explains that if personal annual income (PAI) increase by one point, the odds of preferring in the case of same household life would be expected to decrease 0.37 units in that order of relative to improve household life.

#### 4.16.3.4 Multinomial Probit Model Estimates

To verify the results of the multinomial logit estimate robustness is checked, it also estimated by using the multinomial probit model. Table 4.34 showed the overall model that is statistically significant as the  $\text{Prob} > \chi^2 = 0.0000$ .

**Loan Duration (LD):** An assessment of the variable loan duration (LD) in model 10 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be significantly positive. In contrast, in the case of same household life the slight difference with the assessed results as compare to base category improve household life found to be significantly positive in model 10.

**Training (T):** An evaluation of the variable training (T) in Model 10 the coefficient sign posted the very strong similarity with the assessed results in both cases of worsen and same household life as compare to base category improve household life found to be significantly positive and negative respectively. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

**Loan Size (LS):** An assessment of the variable loan size (LS) in Model 10 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life with the assessed results as compare to base category improve household life found to be insignificant. Thus, the results highlighted that the results of worsen household life are consistent with the results of the multinomial logit model 10.

**Economic Decision Making (EDM):** An examination of the variable economic decision making (EDM) in model 10 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life with the assessed results as compare to base category improve household life found to be significantly negative. Thus, the results highlighted that the results of worsen household life are consistent with the results of the multinomial logit model 10.

**Freedom of Movement (FOM):** An evaluation of the freedom of movement (FOM) in model 10 the coefficient sign posted the very strong similarity with the assessed results in both cases of worsen and same household life as compare to base category improve household life found to be significantly positive respectively. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

**Political Socio-cultural Awareness (PSA):** An assessment of the variable political social awareness (PSA) in model 10 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life the coefficient sign posted the very strong similarity with the assessed results as compare to base category improve household life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

**Age (AGE):** An evaluation of the variable age (AGE) in model 10 the coefficient sign posted the strong similarity with the assessed results in both cases of worsen and same household life as compare to base category improve household life found to be significantly

negative and positive correspondingly. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

**Education (EDU):** Consequently, an evaluation of the variable education (EDU) in model 10 the coefficient sign posted the strong similarity with the assessed results in both cases of worsen and same household life as compare to base category improve household life found to be significantly negative and positive correspondingly. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

**Family Size (FS):** Similarly, an examination of the variable family size (FS) in model 10 the coefficient sign posted the very strong similarity with the assessed results in the case of worsen household life as compare to base category improve household life found to be significantly positive. In contrast, in the case of same household life with the assessed results as compare to base category improve household life found to be insignificant. Thus, the results highlighted that the results of worsen household life are consistent with the results of the multinomial logit model 10.

**Marital Status (MS):** Consequently, an evaluation of the variable marital status (MS) in model 10 the coefficients specified the high robust similarity with the evaluated results in both cases of worsen and same household life compared with improved household life as base, found to be insignificant. Accordingly, the results point out that all the results are consistent with the results of the multinomial logit model 10.

**Personal Annual Income (PAI):** Similarly, an examination of the variable personal annual income (PAI) in model 10 the coefficient sign posted the very strong similarity with the

assessed results in the case of worsen household life as compare to base category improve household life found to be insignificant. In contrast, in the case of same household life the high similarity with the assessed results as compare to base category improve household life found to be significantly negative. Thus, the results highlighted that all the results are consistent with the results of the multinomial logit model 10.

Hence, it is obvious from the above mentioned logit results that microcredit which is measured by loan duration, training and loan size are found to be significant in explaining the household life of the women borrowers of Pakistan. While the findings of the dimensions of personal empowerment which are freedom of movement and political socio-cultural awareness have also a significant relationship with household life. Moreover, in case of demographic variables age, education, family size and personal annual income has significant relationship with household life. In contrast, marital status has no effect on the household life. So, it is evident from the result of the study that not only microcredit played important role in improving household life, but dimensions of personal empowerment have also an important determinant of household life improvement (HHLI).

#### **4.16 Summary of the Findings/Hypothesis**

A tabular summary of the results of the hypotheses tested on the quality of life of women's borrowers on Bahawalpur, Sothern Punjab, Pakistan. As depicted in the Table 4.35, 4.36, 4.36, 4.38 and 4.39 provide a summary of the hypotheses tested on the quality of life to worsen/ same relative to the improve quality of life respectively.

## Summary of Hypothesis Testing of Explanatory Variables

Table 4.35

*Summary of Hypothesis Testing of Explanatory Variables on Overall Quality of Life Improvement of women's borrowers*

H <sub>1</sub> :	Hypothesis	Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 1		H <sub>2</sub> :	Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 2	
		Worsen (1) Not supported Insignificant	Same (2) Supported Significant (+ve)		Worsen (1) Not supported Insignificant	Same (2) Supported Significant (+ve)
H <sub>1a</sub> :	Quality of life is related to Loan Duration	Not supported Insignificant	Supported Significant (+ve)	H <sub>2a</sub> :	Not supported Insignificant	Supported Significant (+ve)
H <sub>1b</sub> :	Quality of life is related to Training	Supported Significant (-ve)	Supported Significant (-ve)	H <sub>2b</sub> :	Supported Significant (-ve)	Supported Significant (-ve)
H <sub>1c</sub> :	Quality of life is related to Loan Size	Supported Significant (-ve)	Supported Significant (-ve)	H <sub>2c</sub> :	Supported Significant (-ve)	Supported Significant (-ve)
H <sub>1d</sub> :	Quality of life is related to Aggregate Personal Empowerment	Supported Significant (-ve)	Not supported Insignificant (-ve)	H <sub>2d</sub> :	-	-
H <sub>1e</sub> :	Quality of life is related to Economic Decision Making	-	-	H <sub>2e</sub> :	Supported Significant (+ve)	Supported Significant (+ve)
H <sub>1f</sub> :	Quality of life is related to Freedom of Movement	-	-	H <sub>2f</sub> :	Not supported Insignificant	Supported Significant (-ve)
H <sub>1g</sub> :	Quality of life is related to Political Socio-cultural Awareness	-	-	H <sub>2g</sub> :	Supported Significant (-ve)	Supported Significant (-ve)
H <sub>1h</sub> :	Quality of life is related to Age	Not supported Insignificant	Not supported Insignificant	H <sub>2h</sub> :	Supported Significant (+ve)	Supported Significant (+ve)
H <sub>1i</sub> :	Quality of life is related to Education	Not supported Insignificant	Not supported Insignificant	H <sub>2i</sub> :	Not supported Insignificant	Supported Significant (+ve)
H <sub>1j</sub> :	Quality of life is related to Family Size	Supported Significant (-ve)	Supported Significant (-ve)	H <sub>2j</sub> :	Supported Significant (-ve)	Supported Significant (-ve)
H <sub>1k</sub> :	Quality of life is related to Marital Status	Not supported Insignificant	Supported Significant (-ve)	H <sub>2k</sub> :	Not supported Insignificant	Supported Significant (-ve)
H <sub>1L</sub> :	Quality of life is related to Personal Annual Income	Supported Significant (-ve)	Supported Significant (-ve)	H <sub>2L</sub> :	Supported Significant (-ve)	Supported Significant (-ve)

Source: "Survey, 2016 computed using STATA Version 13".

Table 4.36

*Summary of Hypothesis Testing of Explanatory Variables on Health Life Improvement of women's borrowers*

<b>H<sub>3</sub>:</b>	<b>Hypothesis</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)}</b>		<b>H<sub>4</sub>:</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)}</b>	
		<b>Model 3</b>			<b>Model 4</b>	
		Worsen (1)	Same (2)		Worsen (1)	Same (2)
<b>H<sub>3a</sub>:</b>	Health Life Improvement is related to Loan Duration	Not supported Insignificant	Not supported Insignificant	<b>H<sub>4a</sub>:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H<sub>3b</sub>:</b>	Health Life Improvement is related to Training	Not supported Insignificant	Not supported Insignificant	<b>H<sub>4b</sub>:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H<sub>3c</sub>:</b>	Health Life Improvement is related to Loan Size	Not supported Insignificant	Not supported Insignificant	<b>H<sub>4c</sub>:</b>	Not supported Insignificant	Not supported Insignificant
<b>H<sub>3d</sub>:</b>	Health Life Improvement is related to Aggregate Personal Empowerment	Supported Significant (-ve)	Supported Significant (-ve)	<b>H<sub>4d</sub>:</b>	-	-
<b>H<sub>3e</sub>:</b>	Health Life Improvement is related to Economic Decision Making	-	-	<b>H<sub>4e</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H<sub>3f</sub>:</b>	Health Life Improvement is related to Freedom of Movement	-	-	<b>H<sub>4f</sub>:</b>	Not supported Insignificant	Not supported Insignificant
<b>H<sub>3g</sub>:</b>	Health Life Improvement is related to Political Socio-cultural Awareness	-	-	<b>H<sub>4g</sub>:</b>	Supported Significant (-ve)	Supported Significant (-ve)
<b>H<sub>3h</sub>:</b>	Health Life Improvement is related to Age	Supported Significant (+ve)	Supported Significant (+ve)	<b>H<sub>4h</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H<sub>3i</sub>:</b>	Health Life Improvement is related to Education	Not supported Insignificant	Supported Significant (+ve)	<b>H<sub>4i</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H<sub>3j</sub>:</b>	Health Life Improvement is related to Family Size	Not supported Insignificant	Supported Significant (+ve)	<b>H<sub>4j</sub>:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H<sub>3k</sub>:</b>	Health Life Improvement is related to Marital Status	Not supported Insignificant	Supported Significant (-ve)	<b>H<sub>4k</sub>:</b>	Not supported Insignificant	Not supported Insignificant



<b>H3L:</b>	Health Life Improvement is related to Personal Annual Income	Supported Significant (-ve)	Supported Significant (-ve)	<b>H4L:</b>	Supported Significant (-ve)	Supported Significant (-ve)
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Source: "Survey, 2016 computed using STATA Version 13".

Table 4.37

*Summary of Hypothesis Testing of Explanatory Variables on Economic Life Improvement of women's borrowers*

<b>H5:</b>	<b>Hypothesis</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 5</b>		<b>H6:</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 6</b>	
		Worsen (1) Supported Significant (-ve)	Same (2) Not supported Insignificant		Worsen (1) Supported Significant (-ve)	Same (2) Not supported Insignificant
<b>H5a:</b>	Economic Life Improvement is related to Loan Duration	Supported Significant (-ve)	Not supported Insignificant	<b>H6a:</b>	Supported Significant (-ve)	Not supported Insignificant
<b>H5b:</b>	Economic Life Improvement is related to Training	Supported Significant (+ve)	Supported Significant (-ve)	<b>H6b:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H5c:</b>	Economic Life Improvement is related to Loan Size	Supported Significant (-ve)	Supported Significant (-ve)	<b>H6c:</b>	Supported Significant (-ve)	Supported Significant (-ve)
<b>H5d:</b>	Economic Life Improvement is related to Aggregate Personal Empowerment	Supported Significant (-ve)	Supported Significant (-ve)	<b>H6d:</b>	-	-
<b>H5e:</b>	Economic Life Improvement is related to Economic Decision Making	-	-	<b>H6e:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H5f:</b>	Economic Life Improvement is related to Freedom of Movement	-	-	<b>H6f:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H5g:</b>	Economic Life Improvement is related to Political Socio-cultural Awareness	-	-	<b>H6g:</b>	Supported Significant (-ve)	Supported Significant (-ve)

<b>H5h:</b>	Economic Life Improvement is related to Age	Not supported Insignificant	Supported Significant (+ve)	<b>H6h:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H5i:</b>	Economic Life Improvement is related to Education	Not supported Insignificant	Supported Significant (+ve)	<b>H6i:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H5j:</b>	Economic Life Improvement is related to Family Size	Not supported Insignificant	Not supported Insignificant	<b>H6j:</b>	Not supported Insignificant	Not supported Insignificant
<b>H5k:</b>	Economic Life Improvement is related to Marital Status	Supported Significant (+ve)	Not supported Insignificant	<b>H6k:</b>	Supported Significant (+ve)	Supported Significant (-ve)
<b>H5l:</b>	Economic Life Improvement is related to Personal Annual Income	Supported Significant (-ve)	Supported Significant (-ve)	<b>H6l:</b>	Supported Significant (-ve)	Supported Significant (-ve)

Source: "Survey, 2016 computed using STATA Version 13".

Table 4.38  
Summary of Hypothesis Testing of Explanatory Variables on Familial Life Improvement of women's borrowers

<b>H7:</b>	<b>Hypothesis</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 7</b>		<b>H8:</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 8</b>	
		Worsen (1) Supported	Same (2) Supported		Worsen (1) Supported	Same (2) Supported
<b>H7a:</b>	Familial Life Improvement is related to Loan Duration	Significant (-ve)	Significant (-ve)	<b>H8a:</b>	Significant (-ve)	Significant (-ve)
<b>H7b:</b>	Familial Life Improvement is related to Training	Supported Significant (-ve)	Supported Significant (-ve)	<b>H8b:</b>	Supported Significant (-ve)	Supported Significant (-ve)
<b>H7c:</b>	Familial Life Improvement is related to Loan Size	Supported Significant (-ve)	Supported Significant (-ve)	<b>H8c:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H7d:</b>	Familial Life Improvement is related to Aggregate Personal Empowerment	Supported Significant (-ve)	Supported Significant (-ve)	<b>H8d:</b>	-	-

<b>H7e:</b>	Familial Life Improvement is related to Economic Decision Making	-	-	<b>H8e:</b>	Not supported Insignificant	Supported Significant (+ve)
<b>H7f:</b>	Familial Life Improvement is related to Freedom of Movement	-	-	<b>H8f:</b>	Supported Significant (-ve)	Supported Significant (-ve)
<b>H7g:</b>	Familial Life Improvement is related to Political Socio-cultural Awareness	-	-	<b>H8g:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H7h:</b>	Familial Life Improvement is related to Age	Supported Significant (+ve)	Supported Significant (+ve)	<b>H8h:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H7i:</b>	Familial Life Improvement is related to Education	Not supported Insignificant	Supported Significant (+ve)	<b>H8i:</b>	supported significant (+ve)	Supported Significant (+ve)
<b>H7j:</b>	Familial Life Improvement is related to Family Size	Supported Significant (-ve)	Not supported Insignificant	<b>H8j:</b>	Supported Significant (-ve)	Not supported Insignificant
<b>H7k:</b>	Familial Life Improvement is related to Marital Status	Not supported Insignificant	Not supported Insignificant	<b>H8k:</b>	Not supported Insignificant	Not supported Insignificant
<b>H7L:</b>	Familial Life Improvement is related to Personal Annual Income	Not supported Insignificant	Supported Significant (-ve)	<b>H8L:</b>	Not supported Insignificant	Supported Significant (-ve)

Source: "Survey, 2016 computed using STATA Version 13".

Table 4.39

*Summary of Hypothesis Testing of Explanatory Variables on Household Life Improvement of women's borrowers*

<b>H<sub>9</sub>:</b>	<b>Hypothesis</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 9</b>		<b>H<sub>10</sub>:</b>	<b>Expected Sign Obtained and Support for Hypothesis { Base Category = (3)} Model 10</b>	
		Worsen (1) Supported Significant (+ve)	Same (2) Not supported Insignificant		Worsen (1) Supported Significant (+ve)	Same (2) Not supported Insignificant
<b>H<sub>9a</sub>:</b>	Household Life Improvement is related to Loan Duration			<b>H<sub>10a</sub>:</b>		
<b>H<sub>9b</sub>:</b>	Household Life Improvement is related to Training	Supported Significant (+ve)	Supported Significant (-ve)	<b>H<sub>10b</sub>:</b>	Supported Significant (+ve)	Supported Significant (-ve)
<b>H<sub>9c</sub>:</b>	Household Life Improvement is related to Loan Size	Supported Significant (+ve)	Supported Significant (-ve)	<b>H<sub>10c</sub>:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H<sub>9d</sub>:</b>	Household Life Improvement is related to Aggregate Personal Empowerment	Supported Significant (+ve)	Supported Significant (-ve)	<b>H<sub>10d</sub>:</b>	-	-
<b>H<sub>9e</sub>:</b>	Household Life Improvement is related to Economic Decision Making	-	-	<b>H<sub>10e</sub>:</b>	Not supported Insignificant	Not supported Insignificant
<b>H<sub>9f</sub>:</b>	Household Life Improvement is related to Freedom of Movement	-	-	<b>H<sub>10f</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H<sub>9g</sub>:</b>	Household Life Improvement is related to Political Socio-cultural Awareness	-	-	<b>H<sub>10g</sub>:</b>	Not supported Insignificant	Supported Significant (-ve)
<b>H<sub>9h</sub>:</b>	Household Life Improvement is related to Age	Supported Significant (-ve)	Supported Significant (+ve)	<b>H<sub>10h</sub>:</b>	Supported Significant (-ve)	Supported Significant (+ve)
<b>H<sub>9i</sub>:</b>	Household Life Improvement is related to Education	Not supported Insignificant	Supported Significant (+ve)	<b>H<sub>10i</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)

<b>H<sub>9j</sub>:</b>	Household Life Improvement is related to Family Size	Supported Significant (+ve)	Supported Significant (+ve)	<b>H<sub>10j</sub>:</b>	Supported Significant (+ve)	Supported Significant (+ve)
<b>H<sub>9k</sub>:</b>	Household Life Improvement is related to Marital Status	Not supported Insignificant	Not supported Insignificant	<b>H<sub>10k</sub>:</b>	Not supported Insignificant	Not supported Insignificant
<b>H<sub>9l</sub>:</b>	Household Life Improvement is related to Personal Annual Income	Not supported Insignificant	Supported Significant (-ve)	<b>H<sub>10l</sub>:</b>	Not supported Insignificant	Supported Significant (-ve)

Source: "Survey, 2016 computed using STATA Version 13".

#### 4.17 Summary of the Chapter

The chapter provides the empirical results on the women borrowers' quality of life of Bahawalpur, Southern Punjab, Pakistan. In order to address the research questions raised in this study, analysis of women borrowers' quality of life was conducted. Multinomial logistic regression was carried out. From the empirical results, one can conclude that significant relationship exist between microcredit, aggregate personal empowerment and quality of life variables. Other explanatory variables consist of age, education, family size, marital status, and personal annual income. On the other hand, key variables of personal empowerment such as economic decision making, freedom of movement and political socio-cultural conditions do influence on overall women borrowers quality of life and its dimensions like health life improvement, economic life improvement, familial life improvement and household life improvement. The findings of this study are therefore in line with the theory of Ventegodt, Merrick and Andersen (2003).

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of empirical findings, conclusion and recommendation of the study. The main determination of this research was set out to study the impact of microcredit and personal empowerment on the women borrowers' quality of life. The study emphasizes that context matters, which in this case includes the global development discourse, Bahawalpur; Southern Punjab, Pakistan's official development paradigm, and its current socio-political and economic conditions. The main objective of this study was to evaluate the level of quality of life of poor women borrowers of Pakistan. Hence the preceding section discussed the summary of the key findings of the present study.

#### 5.2 Summary of the Key Findings

The aim of the study is to investigate the determinants of microcredit and personal empowerment and how they affect women borrowers' quality of life. The research is based on the quantitative personal administrated survey interview of 400 respondents of three microcredit provided institutions Khushhali Bank Limited (KBL), Tameer Microfinance Bank Limited (TMBL) and National Rural Support Program Bank (NRSP-B). The study discovered the overall summary of the quality of life of women borrowers in Bahawalpur, Southern Punjab, Pakistan. Microcredit and personal empowerment is a way to improve women's quality of life in Pakistan. In the present research, (17 percent) of women borrowers reported about the improved quality of life, while the ratio of (20 percent) have worsen quality of life, whereas the rest of the (63 percent) reported the stagnant quality of life due to barriers of the family and society. Perhaps narrow and rigorous political socio-cultural norms and conditions are the root cause of this poor quality of life of women, that's

why Pakistan stood on the 3<sup>rd</sup> rank in the highlighted list of the most dangerous country for women survival in the whole world (The Express Tribune Pakistan, 2011). The findings of the study are therefore summarized below are based on the stated objectives of the study.

### **5.2.1 Findings on effect of Microcredit (MC) and Aggregate personal empowerment (PEagg) on Women Borrowers Quality of life**

In order to determine the factors that influence women borrowers' quality of life in Bahawalpur Punjab, Pakistan, the study use the multinomial logit model. The first null hypothesis is that the quality of life is not influenced by microcredit and personal empowerment. The determining factors consist of microcredit in terms of the loan duration (LD), training (T) and loan size (LS). While personal empowerment is measured as an aggregate. Finding of the study indicates that an increase in microcredit loan duration (LD) there is an increase in the same quality of life as compare to improve quality of life. It indicates that loan duration (LD) positively effects at 1 percent, the same quality of life. In contrast, the coefficients of training (T), loan size (LS) aggregate personal empowerment (PE), family size (FS), marital status (MS) and personal annual income (PAI) are negative and significant at 1 percent, indicating that all the above variables negatively effects worsen and same quality of life. While coefficients of age (AGE) and education (EDU) are not significant, with worsen and same quality of life of women borrower's. The study, therefore, rejects the null hypothesis that women borrowers' quality of life is not influenced by any of the above factors.

### **5.2.2 Findings on effect of Microcredit (MC) and Dimensions of Aggregate personal empowerment (PEagg) on Quality of life (QOL)**

The second null hypothesis is that the quality of life is not influenced by microcredit and dimensions of personal empowerment i.e. economic decision making (EDM), freedom of

movement (FOM) and political socio-cultural awareness (PSA). The results of the study showed that the coefficients of loan duration (LD), economic decision making (EDM), age (AGE) and education (EDU) are positive and significant at 1 percent. It depicted that all the above mentioned variables positively affect worsen and same quality of life which shows decrease in improve quality of life.

In contrast, the coefficients of training (T), loan size (LS), freedom of movement (FOM), political socio-cultural awareness (PSA), family size (FS), marital status (MS) and personal annual income (PAI) are negative and significant at 1, 5 and 10 percent respectively, indicating that decrease in worsen and same quality of life but increase in improve quality of life of women borrowers of Pakistan. In a nutshell, finding of this study is also based on the earlier theory quality of life III and empirical studies reviewed, and therefore conclude that microcredit and dimensions of personal empowerment do affect women borrowers' quality of life. This study, however rejects the null hypothesis that microcredit and dimensions of personal empowerment does not affect women borrowers' quality of life.

### **5.2.3 Findings on effect of Microcredit (MC) and Aggregate personal empowerment (PEagg) on Health Life Improvement (HLI)**

The third null hypothesis is that Health life improvement is not influenced by microcredit and aggregate personal empowerment. The results of the study showed that the coefficients of microcredit loan duration (LD), training (T) and loan size (LS) are not significant, indicating that they have no effect on women worsen and same health life improvement. Besides, the coefficients of aggregate personal empowerment (PEagg), marital status (MS) and personal annual income (PAI) are negative and significant at 1 percent. Thus, these variables negatively affect worsen or same health life improvement relative to improve. This means all these variables improves health life. While the coefficients of age (AGE),



education (EDU) and family size (FS) are positive and significant at 1 percent. It indicating that these variables positively affect worsen and same health life increases relative to improve health life of women borrowers of Pakistan. This study rejects the null hypothesis that personal empowerment does not affect women borrowers of Pakistan health life.

#### **5.2.4 Findings on effect of Microcredit (MC) and Dimensions of Aggregate personal empowerment (PEagg) on Health Life Improvement (HLI)**

The fourth null hypothesis is that that Health life improvement is not influenced by microcredit and dimensions of personal empowerment. The findings of the study revealed that the coefficients of the loan duration (LD), economic decision making (EDM), age (AGE), education (EDU) and family size (FS) are positive and significant at 1 and 10 percent respectively. It indicates that the above variables positively affect worsen and same health life relative to improve health life of women borrowers of Pakistan. In contrast, the coefficients of training (T) political socio-cultural awareness (PSA) and personal annual income (PAI) are negative and significant at 5 and 10 percent correspondingly. Indicating that these factors negatively affects worsen and same health life relative to improve. This means that these factors improves health life. This study rejects the null hypothesis that microcredit and the dimensions of personal empowerment does not affect women borrowers of Pakistan health life. Whereas, loan size (LS), freedom of movement (FOM) and marital status (MS) are insignificant indicating that they have no effect on health life improvement.

#### **5.2.5 Findings on effect of Microcredit (MC) and Aggregate personal empowerment (PEagg) on Economic Life Improvement (ELI)**

The fifth null hypothesis is that economic life improvement is not influenced by microcredit and aggregate personal empowerment. The findings of the study showed that

the coefficient of loan duration (LD), training (T), loan size (LS), personal empowerment (PE) and personal annual income (PAI) are negative and significant at 1 percent. This indicates that all these variables negatively affect worsen and same economic life of women borrowers of Pakistan relative to improve economic life. While, the coefficients of age (AGE), education (EDU) and marital status (MS) are positive and significant at 1 and 5 percent, indicating that these variables positively affect worsen and same economic life of women borrowers of Pakistan increases relative to improve economic life. Besides, family size (FS) is not effect on women borrowers of Pakistan economic life. This study rejects the null hypothesis that microcredit and the aggregate personal empowerment does not affect women borrowers of Pakistan economic life.

#### **5.2.6 Findings on effect of Microcredit (MC) and Dimensions of Aggregate personal empowerment (PEagg) on Economic Life Improvement (ELI)**

The sixth null hypothesis is that economic life improvement is not affected by microcredit and the dimensions of aggregate personal empowerment. Results of the study showed that the coefficients of loan duration (LD), training (T), loan size (LS), political socio-cultural awareness (PSA), marital status (MS) and personal annual income (PAI) are negative and significant at 1 and 5 percent. It indicates that these variables negatively affect worsen or same economic life of women borrowers of Pakistan relative to improve economic life. Furthermore, the coefficients of family size (FS) is insignificant indicating no effect on economic life improvement of women borrowers of Pakistan. In contrast, the coefficients of economic decision making (EDM), freedom of movement (FOM), age (AGE) and education (EDU) are positive and significant at 1 and 5 percent indicating that these variables positively affect worsen and same economic life as compared to improve economic life. This study rejects the null hypothesis that microcredit and the dimensions of personal empowerment does not affect women borrowers of Pakistan economic life.

### **5.2.7 Findings on effect of Microcredit (MC) and Aggregate personal empowerment (PEagg) on Familial Life Improvement (FLI)**

The seventh null hypothesis is that familial life improvement is not influenced by microcredit and aggregate personal empowerment. The findings of the study showed that the coefficients of loan duration (LD), training (T), loan size (LS), aggregate personal empowerment (PE), family size (FS) and personal annual income (PAI) are negative and significant at 1 and 5 percent. It indicates that these variables have a negative effect on worsening or same familial life relative to improve familial life of women borrowers of Pakistan. Moreover, marital status (MS) is insignificant, indicating no effect on familial life improvement of women borrowers of Pakistan. On the contrary, the coefficients of age (AGE) and education (EDU) are positive and significant at 1 percent, indicating that these variables positively affect worsening or same familial life relative to improve familial life of women borrowers of Pakistan. This study rejects the null hypothesis that microcredit and aggregate personal empowerment does not affect women borrowers of Pakistan familial life.

### **5.2.8 Findings on effect of Microcredit (MC) and Dimensions of personal empowerment (PEagg) on Familial Life Improvement (FLI)**

The eighth null hypothesis is that familial life improvement is not influenced by microcredit and dimensions of personal empowerment. Findings of the study showed that the coefficients of loan duration (LD), training (T), loan size (LS), freedom of movement (FOM), political socio-cultural awareness (PSA), family size (FS) and personal annual income (PAI) are negative and significant at 1 percent, indicating that these variables negatively affect worsening and same familial life relative to improve familial life of women borrowers of Pakistan. While the coefficient of marital status (MS) is insignificant, indicating that it has no effect on familial life of women borrowers of Pakistan. Besides,

the coefficient of economic decision making (EDM), age (AGE) and education (EDU) are positive and significant at 1 and 10 percent indicating that these variables have positive affect on worsen and same familial life as to improve familial life of women borrowers of Pakistan. This study rejects the null hypothesis that microcredit and dimensions of personal empowerment do not affect women borrowers of Pakistan familial life.

#### **5.2.9 Findings on effect of Microcredit (MC) and Aggregate personal empowerment (PEagg) on Household Life Improvement (HHLI)**

The ninth null hypothesis is that household life improvement is not influenced by microcredit and aggregate personal empowerment. Findings of the study showed that the coefficient of loan duration (LD), education (EDU) and family size (FS) are positive and significant at 1, 5 and 10 percent indicating that these variables have positive affect on worsen and same household life relative to improve household life of women borrowers of Pakistan. In contrast, the coefficient of marital status (MS) is insignificant and has no effect on household life improvement of women borrowers of Pakistan.

While the coefficients of personal annual income (PAI), training (T), loan size (LS) and personal empowerment (PE) are negative and significant at 1 percent indicating these variables are negatively affects same household life relative to improve household life of women borrowers of Pakistan. Likewise, the coefficient of age (AGE) is negative and significant at 10 percent indicating it negatively affects worsen household life relative to improve the household life of women borrowers of Pakistan. This study rejects the null hypothesis that microcredit and aggregate personal empowerment does not affect women borrowers of Pakistan household life.

### **5.2.10 Findings on effect of Microcredit (MC) and Dimensions of personal empowerment (PEagg) on Household Life Improvement (HHLI)**

The last null hypothesis is that household life improvement is not influenced by microcredit and dimensions of personal empowerment. Results of the study showed that the coefficients of loan duration (LD), age (AGE), family size (FS) and freedom of movement (FOM) are positive and significant at 1, 5 and 10 percent accordingly, which indicates that all these variables have positive affect on worsen or same household life relative to improve household life of women borrowers of Pakistan. Furthermore, the coefficients of training (T), loan size (LS), political socio-cultural awareness (PSA), education (EDU) and personal annual income (PAI) are negative and significant at 1 percent. It indicates that all these variables negatively affect worsen or same household life relative to improve the household life of women borrowers of Pakistan. In contrast, the coefficients of economic decision making (EDM) and marital status (MS) are insignificant and have no effect on household life improvement of women borrowers of Pakistan. This study rejects the null hypothesis that microcredit and dimensions of personal empowerment do not affect women borrowers of Pakistan household life.

### **5.3 Conclusion**

The quality of life of women is one of the essential issues in the process of development of all developing countries in the world. This is particularly true in Pakistan, where women personal empowerment is limited such as in terms of their mobility, economic decision making and political socio-cultural awareness, due to various socio-cultural constraints. In this context, while microcredit program seems to provide a practical solution in improving quality of life of women in Pakistan, it would not be fully effective without their personal empowerment. Accessibility to microcredit and personal empowerment must go hand in hand if the aim of improving quality of life of women in Pakistan is to be realized. Thus,

the argument advanced in this study is that, while microcredit is important, equally important is the role of personal empowerment as one of the tools to improve quality of life of women in Pakistan. Personal empowerment should not be viewed as an outcome of the microcredit program, but rather as the determinant of quality of life of women itself. The role of personal empowerment has been ignored in the previous studies in Pakistan.

The findings of this study reveal that microcredit, which is measured by loan size and training, are found to be significant in explaining quality of life of the women borrowers. Interestingly, the findings of this study also show that personal empowerment has a significant relationship with quality of life of these women. In particular, the freedom of movement and political-social-cultural awareness domains of personal empowerment are found to be significant in explaining quality of life of the women borrowers. However, the economic decision making domain of personal empowerment is found significant in explaining quality of life of the women borrowers.

Thus, the findings of this study support the main argument advanced in this study that personal empowerment of women play an important role in determining their quality of life. Therefore, improving the quality of life of women in Pakistan should not be solely focused on the accessibility of credit to them. It must be come together with enhancing their personal empowerment. The policy implication of this study is that, in the context where women are facing with various socio-cultural constraints that limit their personal empowerment such as in Pakistan, the aim of improving the quality of life of these women must be done by improving accessibility of these women to microcredit as well as enhancing their personal empowerment, simultaneously. Therefore, the government and other development organizations should focus on improving accessibility of women to quality education and reducing the socio-cultural-political barriers that hinder them from

realizing their full potential of personal empowerment, seems to be the way forward if the aim of improving the quality of life of women is to be realized.

#### **5.4 Significance of the Findings**

This scholarship has delivered particular significant support to the lion's share of research in the discipline of microcredit (microfinance) and personal empowerment (empowerment) and to the literature by postulating findings on the issues that have an impact on the women borrower's quality of life, particularly in Bahawalpur, Southern Punjab, Pakistan. Instantaneously, the research is also taking part in the women's development sector by identifying recommendations and suggestions on the behalf of findings. Some suggestions that can be spoken into the concern by these microfinance institutions, government and NGOs which would in favor of support to a development of microcredit organization and personal empowerment of women and finally to advancing the strategy on the underlining, the results of this study. The following sections address the theoretical, methodological and practical significance.

##### **5.4.1 Theoretical Significance**

Theoretical significance of the findings showed that the Quality of life theory III, used in the present study supports the relationship between microcredit, personal empowerment and quality of life. This study provided scientific information about the importance of role of personal empowerment among the women borrowers of Pakistan. The finding generated knowledge from the findings also validated or contradicted previous researches. Thus, knowledge is expanded in this area.

In the context of Pakistan Ali, Ali and Subhan, (2015); Naeem *et al.*, (2014); Jafree and Ahmad (2013); Saleem *et.al.*, (2011); Mahmood (2011); Jabeen and Iqbal (2010); Haq and

Khalid (2010); Mumtaz (2007) findings reveal that the majority of women users of microcredit is facing vulnerability, they are illiterate and employed as untrained labor and increasing expenditures on food, health and clothing. Some non-economic variables of quality of life were evidenced as an obstacle to improve it after taking micro credit. Thus microcredit was found to have a statistically significant relationship with the quality of life. According to previous researches in Pakistan Personal empowerment is a main issue that is related to quality of life, but there are few researches on the said issue (Mumtaz & Salway, 2005 & Asher & Khattak 2014). This study drew conclusion by examining personal empowerment in Pakistan. So, women have great need to unlock the potential of personal empowerment, because it has been exploited by the socio-cultural conditions.

Furthermore, most of the women borrowers showed that they spent the sub-standard lives and chosen to have loans to launch their own business (Khan & Rahaman, 2007). Shabbir and Gregorio (1996) found that in Pakistan, freedom seekers were mostly women who had dissatisfied with their paid work and wanted to start their own business but most of the women faced the financial obstacles. Microfinance is a kind of the credit that comforts women by engaging them in small business. Hence, this research plays a part of literature by examining the impact of microcredit and its domains of loan size, training and loan duration on women's quality of life in Pakistan.

On the other hand, the significant effect of highly personally empowered women on her decision making ability regarding income and expenditures, children education and health, control over resources, self-determination, self-strength, freedom of mobility, political socio-cultural awareness regarding casting right to vote, strengthening legal systems aimed at elimination of all forms of discrimination against women, changing societal attitudes and community practices by active participation and involvement of both men and women,



mainstreaming a gender perspective in the development process, elimination of discrimination and all forms of violence against women and the girl child and building and strengthening partnerships with civil society, particularly women's organizations. Hence this study has a significance in literature by examining the impact of personal empowerment on quality of life.

Furthermore, Pakistan has the second highest gender gap rates in the world regarding school enrollment. The male enrollment is supported by parents and society while females have less education than men (Bahmani & Nasir, 2002). Therefore, this study contributes to the literature on its significance, so far that this is the first empirical research that has observed and checked the microcredit and personal empowerment to its impact on women's quality of life.

#### **5.4.2 Methodological Significance**

In the perspective of measuring quality of life of the respondents, the question should express in the recent days to measure their quality of life level. Mind-set and feeling may influence their reactions at the time of the study in this way, the question has importance to take out the real answer (Bertrand and Mullainathan, 2001). However, even if a researcher uses good model to estimate the effect, but does not measure the quality of life in real time, it can create uncertain findings that can lead towards wrong, direction. There are few studies that measure the quality of life in genuine moment. This study contributes significantly by measuring quality of life in real time. Additionally, this study has significance by discussing the estimation results of the multinomial probit model (MNPM) to determine whether our results of the multinomial logit model (MNL) are robust to different estimation of MNPM.

### 5.4.3 Practical Significance

According to human development index report (HDI), (2015) Pakistan fall its 3<sup>rd</sup> rank of low human development index category of female is (0.43) and lie 147<sup>th</sup> out of the 188<sup>th</sup> country of the Gender Development Index (0.72), whereas Gender Inequality Index (GII) is (0.53) having rank 121<sup>st</sup> out of 188<sup>th</sup> country of the world. In Pakistan the labor participation of females is (24.6 percent) while the missing women in labor participation ratio are (75.4 percent). Due to this Pakistan's multidimensional poverty index (MPI) is (0.237) which means that (45.6 percent) population suffered in multidimensional poverty with intensity deprivation rate is (52 percent) of basic facilities, in which population near to multidimensional poverty is (15 percent) and population in severe multidimensional poverty is (26.5 percent) due to this Pakistan has to face (32 percent) bad health rate, poor education is (36 percent) and overall low living standard rate is (31.6 percent). In the light of this crucial reality Pakistan quality of life index is (93.41) correspondingly. Hence this study has a practical contribution in the context of Pakistan's society for the sake of improvement in the lives of Pakistani women generates diverse effects than in other societies.

Last 70 years, various political governments of Pakistan had taken some steps towards women better quality of life, but it is utilized by a very small proportion of urban women whereas rural women are still livings in a miserable condition. Women are the important part of society and country studies should be conducted on them (Shabbir & Gregorio, 1996). As Pakistani society is different from other societies. Women have different perspectives on Pakistani society. So, this study contributes by conducting research on women in Bahawalpur, Southern Punjab, Pakistan.

In the current study most of the significantly personally empowered women borrowers were supported through microcredit aged (26-35) and most of them (46 percent) were married in which majority of them (58 percent) borrowers belonged to nuclear family and five to six members respectively. The percentage of women who have no education was (50 percent) and (43 percent) associated with agriculture sector and (41 percent) have their possession on personal annual income in the range of (150,000-199,000/- RS). About (15 percent) women borrowers were already personally empowered. Almost (19 percent) have significantly still have decision making ability according to their own will, while (20 percent) women borrowers are significantly moving with freedom as they already moved, whereas (24 percent) yet significantly come up with political socio-cultural awareness correspondingly.

The microcredit institutions and Non-Governmental Organizations can revise their policies on the basis of the findings of this study ultimately will improve their performance and these institutions can help the government in women's development and poverty reduction programs. It has been mentioned earlier that highly personally empowered women confers better services to family, society and nation and bring more stability and robustness to the country. This would in turn positively influence the development of the country's economy. Policy makers in Pakistan can pay a profound attention towards the development of women in the context of her strong personal empowerment and development of microfinance institutions in terms of microcredit through looking at the variables and factors involved that influence women's quality of life.

### **5.5 Policy Implications of the study**

This scholarship addresses the Implications on theoretical, methodological and practical feature as below.

### **5.5.1 Theoretical Implications**

In the theoretical implications, the theory of quality of life III has been extensively used in the medical sciences, nevertheless there are few studies in social sciences that used this theory. Therefore, the use of the above said theory is a theoretical implication in the field of economics which demonstrate that the development towards the concept of human needs and an existentialistic attitude of self-actualization, based on personal growth. So personal empowerment raises up their quality of life.

Though there are some studies that microcredit has a significant effect, on the other hand women development institutes depicted the true success stories of personally empowered women where her own self and families have been able to recover from major crises through their continued association with both institutions. This study adds to positive side by finding and significant impact of microcredit and personal empowerment on women borrowers' quality of life. The modern research should be considered latest study of 2017, using the robust tool of analyses. The implication of the study is that microcredit and personal empowerment contribute positively to the women borrower's quality of life in Pakistan. This supports the theory on quality of life Theory III and previous studies that yielded the same result. It should, therefore be noted that the positive relationship still exists among microcredit and personal empowerment and women borrower's quality of life. It is also expected that this research will prove as a guide for further studies including the evaluation of the relationship among microcredit and personal empowerment and women borrower's quality of life.

### **5.5.2 Practical Implications**

Based on the findings of the study, this study recommends to government, MFIs and NGO sponsors encourage poor women to participate in microcredit and personal empowerment,

older women who have big family size should be given a large amount of loan so that they can get engaged in more profitable businesses. In the context of implication, the government and its agencies will have a stronger basis for promoting education programs among females upon which to rely personal empowerment program.

On the basis of findings, of model 1 and model 2 which are main models of the present study, it can be concluded that the quality of life of poor women borrowers in Pakistan is significantly influenced by loan size, training, loan duration, economic decision making, freedom of movement and political socio-cultural awareness, age, education, family size, marital status and personal annual income. According to Pakistan Economic Survey (2014-2015) reported that spending on men's literacy is more than female literacy. Women in Pakistan are looking for opportunities to get finance. They want government to allocate funds for them. Chaudhry, Nosheen and Lodhi (2012) expresses that equal access of men and women to development program is essential for national development and progress and government fails to produce data on budget spending for women because of political issues. Furthermore, the resources are very limited and division of the available resources is not allotted on an equal basis, but still the government has tended to manage and spend more budgets on women's development by decreasing expenditures from other sectors like government spending on politicians' protocols can be minimized and shift in women's development. There is a need of serious consideration by the government to review budget policy and spend more money on women's development.

## **5.6 Limitations of the Study**

The exploration concerning to economic studies are commonly come across with many limitations for the apparent reasons and the present study is no exception to the phenomenon. The present study has encountered some specific limitations, such as: the

study requires the use of primary data by administering a written questionnaire to women borrowers. The low literacy level of women under study has been a serious constraint. This made it difficult for them to respond adequately to the questions in the questionnaire. There are no reporting agencies in Pakistan on several women issues. Women have been one of the major source for development in the Pakistan economy. However, no proper methods for the collection of information were available to see the effect of quality of life. Data has only been collected by the three banks and difficult to have the information. Obtaining data on poor women poses a big challenge to the study, as many of the women belong to conservative and rigid society. Thus, these norms have created problems in collecting information. In short, the study is broadly confined to the quality of life of women of the country rather than all the borrowers of the microfinance banks in practice.

### **5.7 Future Recommendations**

The quality of life of Women borrowers' is a wider area of study. No study work is absolute, conclusive and significant. Similarly, this scholarship has also some specific limitations and this research is not an exception. Women borrowers' quality of life cannot be judged on any benchmark, therefore it is suggested, to develop a universal standard for enhancing women borrower's quality of life to motivate researches to take up work in this field. The main purpose of this study was to further investigate the empirical association among microcredit and personal empowerment and women borrowers' quality of life.

Henceforth, the future recommendations are based on the limitations of the present study such as in the current research, the data is collected from Bahawalpur division only not for the whole of Pakistan because of financial constraints and time limitations. Future studies can take samples of respondents from whole of Pakistan. This study is based on cross-sectional data and results might be different if in the future researchers employ longitudinal

data. Perception measures of personal empowerment and women borrowers' quality of life are subjective in nature and objective measures can be used in future researches. This study observed the positive and significant impact of personal empowerment on women borrowers' quality of life, while future researchers can examine the mediating and moderating role of personal empowerment between microcredit and quality of life.

Furthermore, it is also recommended that women's standpoint should be conveyed to the women development, management and microfinance authorities for appropriate implementation of the plan. As the study is conducted in the deprived areas of Bahawalpur, it is also suggested that the government should keep the needs of the illiterate business women in view, while designing training programs for them. This study was based on the microfinance institutions while the future researches can prefer to select the government, non-government agencies and international agencies that financially support women to engage them in economic activities and to investigate the impact of microcredit and personal empowerment and women borrowers' quality of life.

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## APPENDICES

### Questionnaire

Bank Name: -----

Respondent No: -----

#### A. Demographic household characteristics.

First, we would like to ask you about your household?

1	How old are you?	(18-25) 1	(26-35) 2	(36-45) 3	(46-55) 4	(56-65) 5
2	What is your education level?	Illiterate 1	Primary 2	Secondary 3	Higher. Sec 4	Degree 5
3	How many family members are there in your household including yourself?	1-2 members 1	3-4 members 2	5-6 members 3	7-8 members 4	9 & above 5
4	What is your marital status?	Unmarried 1	Married 2	Widow 3	Divorce 4	Separated 5
5	What is your own personal annual income? (Annually)	(Less than 49,000) 1	(50,000-99,000) 2	(100,000-149,000) 3	(150,000-199,000) 4	(200,000-more) 5

#### B. Microcredit Loan Profile

6	How long have you utilized microfinance loan?	1-12 months 1	12-24 months 2	24-36 months 3	36-48 months 4	48- more 5
7	Did you get training by the bank for the loan usage?	1 day 1	2 days 2	3 days 3	4 days 4	Not at all 5

8	How much the loan size have you taken? (Amount in PKR)				
	(5000-10,000) 1	(10,000-15,000) 2	(15,000-20,000) 3	(20,000-25,000) 4	(25,000-more) 5
9	For which activity/ purpose loan was taken?				
	Services 1	Poultry 2	Livestock 3	Agriculture 4	Trade 5
10	What is the type of loan?				
	Group 1	Individually 2	Family-group 3	Other 4	None 5

### C. Personal empowerment

#### i. Personal empowerment of Women In Economic Decision Making (11-25)

Definition of scale

- 1 No Ability
- 2 Sometimes ability
- 3 Full ability

Since taking a loan your ability describes in Economic Decision Making with regard to the following:

	Items	No ability 1	Sometimes ability 2	Full ability 3
11.	How is your ability to spend your own income since taking a loan?			
12.	How is your ability to spend your family income since taking a loan?			
13.	How is your ability to purchase anything without permission of your husband since taking a loan?			
14.	How is your ability to provide financial help to others?			
15.	How is your ability to spend on health care since taking a loan?			
16.	How is your ability to spend on children's education since taking a loan?			
17.	How is your ability for lending and borrowing money since taking a loan?			
18.	How is your ability to buy gift for social functions since taking a loan?			
19.	How is your ability to spend on daily food since taking a loan?			
20.	How is your ability to spend on ice-cream or chocolate for your children since taking a loan?			
21.	How is your ability to spend on clothing since taking a loan?			
22.	How is your ability to spend on livestock since taking a loan?			
23.	How is your ability to decide on leasing land since taking a loan?			
24.	How is your ability to decide on van/rickshaw purchase since taking a loan?			

25	How is your ability to manage an emergency fund (if you need 500/- Rs in an emergency)?			
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ii. **Personal empowerment of Women in Freedom Of Movement (26-33)**

Definition of scale:

1 – No Freedom

2 – Sometimes Freedom

3 – Full Freedom

Since taking loan do you have the freedom to do the following?

	Items	No freedom 1	Sometimes Freedom 2	Full freedom 3
26.	Do you go outside the home without permission of your husband since taking a loan?			
27.	Do you go to visit to relatives since taking a loan?			
28.	Do you go alone outside the village since taking a loan?			
29.	Do you go outside the district or sub-district alone since taking a loan?			
30.	Do you go to health center alone since taking a loan?			
31.	Do you go to a bank alone since taking a loan?			
32.	Do you go to a local government office alone since taking a loan?			
33	Do you go for shopping alone since taking a loan?			

iii. **Personal empowerment of Women In Political and Social-Cultural Awareness(34-43)**

Definition of scale:

1 Not agree

2 Sometimes Agree

3 Fully Agree

Since taking loan provides your agreement to the following:

	Items	Not agree 1	Sometimes Agree 2	Fully Agree 3
34.	Do you agree to cast your vote according to your own decision since taking a loan?			
35.	Do you agree to participate in any public protest (unfair wage, Unfair price, misappropriation of relief goods) or in any campaign politically since taking a loan?			
36.	Do you agree to participate in any social participation (such as social function, helping neighbors, social meetings etc.) since taking a loan?			
37.	Do you agree to have your own views about registration marriage since taking a loan?			
38.	Do you agree to have your own views early marriage since taking loans?			
39.	Do you agree to support stopping dowry since taking a loan?			

40.	Do you agree to support stopping child labor since taking a loan?			
41.	Do you agree to support girl-child education since taking a loan?			
42.	Do you agree to support equal food for girl and boy child since taking a loan?			
43.	Do you agree to support to make small family since taking a loan?			

## 2 Quality of Life of Women

Definition of scale

- 1 Worsen
- 2 Same
- 3 Improved

### 1. Health life Improvement

	Items	Worsen 1	Same 2	Improved 3
44.	How has your purchasing power with regard to the following food items (e.g., flour, vegetable oil, sugar, other grocery items, vegetables, meat etc.) has changed since taking a loan?			
45.	How has your intake of food items (e.g., Milk, Meat & fruits) since taking a loan?			
46.	How is your ability to pay doctor fee & medicine since taking a loan?			
47.	How is your ability to cope with work related stress since taking a loan?			

### 2 Economic life Improvement

	Items	Worsen 1	Same 2	Improved 3
48.	How is your ability to pay utility bills since taking a loan?			
49.	How is your ability in dealing with business matters since taking a loan?			
50.	How is your ability in participation in income generating activities since taking a loan?			
51.	How are your personal savings from taking a loan?			



### 3 Familial life Improvement

	Items	Worsen 1	Same 2	Improved 3
52.	How is your ability to manage spousal relations since taking a loan?			
53.	How do you command respect in family since taking a loan?			
54.	How is your ability to give quality time to your family since taking a loan?			
55.	How are your visits to relatives/friends since taking a loan?			

### 4 Household / Living Quality of Life (Subjective-wellbeing)

	Items	1	2	4
56.	How many Rooms are there in your house?	1 Room 1	2-3 Rooms 2	4-5 Rooms 3
57.	Do you have toilet facility in your house?	No Toilet 1	Toilet without Flush 2	Toilet with Flush 3
58.	What type of drinking water is available in your household?	Tap water 1	Hand Pump 2	Machine Pump 3
59.	Do you have electricity connection in your house?	No connection 1	Temporarily connection 2	Full connection 3
60.	Which type of consumer durables and HH assets you own:	Fan 1	Air cooler 2	Air conditioner 3
a	Home Appliances	Refrigerator 1	Sewing Machine 2	Washing Machine 3
b	Media	Radio 1	TV 2	Personal Computer 3
c	Communication	Land Line 1	Mobile 2	Use Public call office 3
d	Vehicle	Bicycle 1	Motorcycle 2	Car 3

Thank you for co-operation

\*This instrument is adapted from the questionnaire of (Jaffree, (2013); Michael Pennock (2009), Veenhoven (2009) Nessa, (2008); Rehman & Naoroze, (2007); Pitt, Khandker & Cartwright (2006), WHOQOL (2004).

### Cross tabulation of the Variables

Table 4.40  
*Profile of Microcredit Loan Duration (LD) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Loan Duration (LD)					Total N (f)
	1-12 months	12-24 months	24-36 months	36-48 months	48- more	
(18-25)	0 (0%)	20 (100%)	0 (0%)	0 (0%)	0 (0%)	20 (5%)
(26-35)	0 (0%)	160 (79%)	43 (21%)	0 (0%)	0 (0%)	203 (50.75%)
(36-45)	15 (18%)	0 (0%)	70 (82%)	0 (0%)	0 (0%)	85 (21.25%)
(46-55)	0 (0%)	26 (70%)	11 (30%)	0 (0%)	0 (0%)	37 (9.25%)
(56-65)	0 (0%)	25 (46%)	15 (27%)	15 (27%)	0 (0%)	55 (13.75%)
Total	15 (4%)	231 (60%)	139 (36%)	15 (4%)	0 (0%)	400 (100%)
Education (EDU)	Loan Duration (LD)					Total N (f)
	1-12 months	12-24 months	24-36 months	36-48 months	48- more	
Illiterate	0 (0%)	26 (31.75%)	41 (50.00%)	15 (18.29%)	0 (0%)	82 (20.50%)
Primary	15 (12.71%)	92 (77.97%)	11 (9.32%)	0 (0%)	0 (0%)	118 (29.50%)
Secondary	0(0%)	91 (58.33%)	65 (41.67%)	0 (0%)	0 (0%)	156 (39.00%)
Higher. Sec	0 (0%)	0 (0%)	22 (100%)	0 (0%)	0 (0%)	22 (5.50%)
Degree	0 (0%)	22 (100%)	0 (100%)	0 (100%)	0 (0%)	22 (5.50%)
Total	15 (3.75%)	231 (57.75%)	139 (34.75%)	15 (3.75%)	0 (0%)	400 (100%)
Family Size(FS)	Loan Duration (LD)					Total N (f)
	1-12 months	12-24 months	24-36 months	36-48 months	48- more	
1-2 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3-4 members	0 (0%)	51 (82.26%)	11 (17.74%)	0 (0%)	0 (0%)	62 (15.50%)
5-6 members	15 (6.47%)	104 (44.83%)	113 (48.71%)	0 (0%)	0 (0%)	232 (58%)
7-8 members	0 (0%)	76 (71.70%)	15 (14.15%)	15 (14.15%)	0 (0%)	106 (26.50%)
7-8 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0(0%)
Total	15 (3.75%)	231 (57.75%)	139 (34.75%)	15 (3.75%)	0 (0%)	400 (100%)
Marital Status (MS)	Loan Duration (LD)					Total N (f)
	1-12 months	12-24 months	24-36 months	36-48 months	48- more	
Unmarried	0 (0%)	20 (100%)	0 (0%)	0 (0%)	0 (0%)	20 (5.00%)
Married	15 (8.06%)	145 (77.96%)	26 (13.98%)	0 (0%)	0 (0%)	186 (46.50%)
Widow	0 (0%)	26 (24.53%)	80 (75.47%)	0 (0%)	0 (0%)	106 (26.50%)
Divorce	0 (0%)	25 (53.19%)	22 (46.81%)	0 (0%)	0 (0%)	47 (11.75%)
Separated	0 (0%)	15 (36.59%)	11 (26.83%)	15 (36.59%)	0 (0%)	41 (10.25%)
Total	15 (3.75%)	231 (57.75%)	139 (34.75%)	15 (3.75%)	0 (0%)	400 (100%)
Personal Annual Income (PAI)	Loan Duration (LD)					Total N (f)
	1-12 months	12-24 months	24-36 months	36-48 months	48- more	
(Less than 49,000)	0 (0%)	14 (100%)	0 (0%)	0 (0%)	0 (0%)	14 (3.50%)
(50,000-99,000)	0 (0%)	69 (75.82%)	22 (24.18%)	0 (0%)	0 (0%)	91 (22.75%)
(100,000-149,000)	15 (20.55%)	15 (20.55%)	43 (58.90%)	0 (0%)	0 (0%)	73 (18.25%)
(150,000-199,000)	0 (0%)	96 (58.90%)	52 (31.90%)	15 (9.20%)	0 (0%)	163 (40.75%)
(200,000-more)	0 (0%)	37 (62.71%)	22 (37.29%)	0 (0%)	0 (0%)	59 (14.75%)
Total	15 (3.75%)	231 (57.75%)	139 (34.75%)	15 (3.75%)	0 (0%)	400 (100%)

Table 4.41  
*Profile of Microcredit Training (T) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Training (T)					Total N (f)
	1 day	2 days	3 days	4 days	5 days	
(18-25)	0 (0%)	0 (0%)	20 (100%)	0 (0%)	0 (0%)	20 (5.00%)
(26-35)	0 (0%)	72 (35.47%)	120 (59.11%)	0 (0%)	11 (5.42%)	203 (50.75%)
(36-45)	15 (17.65%)	0 (0%)	33 (33.82%)	22 (25.88%)	15 (17.65%)	85 (21.25%)
(46-55)	0 (0%)	26 (70.27%)	0 (0%)	11 (29.73%)	0 (0%)	37 (9.25%)
(56-65)	0 (0%)	55 (100.00%)	0 (0%)	0 (0%)	0 (0%)	55 (13.75%)
Total	15 (3.75%)	153 (38.25%)	173 (43.25%)	33 (8.25%)	26 (6.50%)	400 (100%)
Education (EDU)	Training (T)					Total
	1 day	2 days	3 days	4 days	5 days	N (f)
Illiterate	15 (18.29%)	67 (81.71%)	0 (0%)	0 (0%)	0 (0%)	82 (20.50%)
Primary	0 (0%)	29 (24.58%)	52 (44.07%)	11 (9.32%)	26 (22.03%)	118 (29.50%)
Secondary	0 (0%)	57 (36.54%)	99 (63.46%)	0 (0%)	0 (0%)	156 (39%)
Higher. Sec	0 (0%)	0 (0%)	0 (0%)	22 (100%)	0 (0%)	22 (100%)
Degree	0 (0%)	0 (0%)	22 (100%)	0 (0%)	0 (0%)	22 (100%)
Total	15 (3.75%)	153 (38.25%)	173 (43.25%)	33 (8.25%)	26 (6.50%)	400 (100%)
Family Size(FS)	Training (T)					Total
	1 day	2 days	3 days	4 days	5 days	N (f)
1-2 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3-4 members	0 (0%)	25 (40.32%)	26 (41.94%)	0 (0%)	11 (17.74%)	62 (15.50%)
5-6 members	15 (6.47%)	63 (27.16%)	117 (50.43%)	22 (9.48%)	15 (6.47%)	232 (58.00%)
7-8 members	0 (0%)	65 (61.32%)	30 (28.30%)	11 (10.30%)	0 (0%)	106 (26.50%)
9 & above	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	15 (3.75%)	153 (38.25%)	173 (43.25%)	33 (8.25%)	26 (6.50%)	400 (100%)
Marital Status (MS)	Training (T)					Total
	1 day	2 days	3 days	4 days	5 days	N (f)
Unmarried	0 (0%)	0 (0%)	20 (100%)	0 (0%)	0 (0%)	20 (5.00%)
Married	15 (8.06%)	35 (18.82%)	99 (53.23%)	11 (5.91%)	26 (13.98%)	186 (46.50%)
Widow	0 (0%)	52 (49.06%)	32 (30.19%)	22 (20.75%)	0 (0%)	106 (26.50%)
Divorce	0 (0%)	25 (53.19%)	22 (46.81%)	0 (0%)	0 (0%)	47 (11.75%)
Separated	0 (0%)	41 (100%)	0 (0%)	0 (0%)	0 (0%)	41 (10.25%)
Total	15 (3.75%)	153 (38.25%)	173 (43.25%)	33 (8.25%)	26 (6.50%)	400 (100%)
Personal Annual Income (PAI)	Training (T)					Total
	1 day	2 days	3 days	4 days	5 days	N (f)
(Less than 49,000)	0 (0%)	14 (100%)	0 (0%)	0 (0%)	0 (0%)	14 (3.50%)
(50,000-99,000)	0 (0%)	37 (40.66%)	43 (47.25%)	0 (0%)	11 (12.09%)	91 (22.75%)
(100,000-149,000)	0 (0%)	26 (35.62%)	32 (43.84%)	0 (0%)	15 (20.55%)	73 (18.25%)
(150,000-199,000)	15 (9.20%)	65 (39.88%)	50 (30.67%)	33 (20.25%)	0 (0%)	163 (40.75%)
(200,000-more)	0 (0%)	11 (18.64%)	48 (81.36%)	0 (0%)	0 (0%)	59 (14.75%)
Total	15 (3.75%)	153 (38.25%)	173 (43.25%)	33 (8.25%)	26 (6.50%)	400 (100%)

Table 4.42  
*Profile of Microcredit Loan Size (LS) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Loan Size (LS)					Total
	(5000-10,000)	(10,000-15,000)	(15,000-20,000)	(20,000-25,000)	(25,000-more)	N (f)
(18-25)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	20 (100.00%)	20 (5.00%)
(26-35)	0 (0%)	0 (0%)	21 (10.34%)	76 (37.44%)	106 (52.22%)	203 (50.75%)
(36-45)	0 (0%)	0 (0%)	26 (30.59%)	59 (69.41%)	0 (0%)	85 (21.25%)
(46-55)	0 (0%)	0 (0%)	11 (29.73%)	0 (0%)	26 (70.27%)	37 (9.25%)
(56-65)	0 (0%)	0 (0%)	0 (0%)	15 (27.27%)	40 (72.73%)	55 (13.75%)
Total	0 (0%)	0 (0%)	58 (14.50%)	150 (37.50%)	192 (48.00%)	400 (100%)
Education (EDU)	Loan Size (LS)					Total
	(5000-10,000)	(10,000-15,000)	(15,000-20,000)	(20,000-25,000)	(25,000-more)	N (f)
Illiterate	0 (0%)	0 (0%)	15 (18.29%)	15 (18.29%)	52 (63.41%)	82 (20.50%)
Primary	0 (0%)	0 (0%)	11 (9.32%)	56 (47.46%)	51 (43.22%)	118 (29.50%)
Secondary	0 (0%)	0 (0%)	32 (20.51%)	57 (36.54%)	67 (42.95%)	156 (39.00%)
Higher. Sec	0 (0%)	0 (0%)	0 (0%)	22 (100.00%)	0 (0%)	22 (5.50%)
Degree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	22 (100%)	22 (5.50%)
Total	0 (0%)	0 (0%)	58 (14.50%)	150 (37.50%)	192 (48.00%)	400 (100%)
Family Size(FS)	Loan Size (LS)					Total
	(5000-10,000)	(10,000-15,000)	(15,000-20,000)	(20,000-25,000)	(25,000-more)	N (f)
1-2 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3-4 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)	62 (100%)	62 (15.50%)
5-6 members	0 (0%)	0 (0%)	47 (20.26%)	85 (36.64%)	100 (43.10%)	232 (58.00%)
7-8 members	0 (0%)	0 (0%)	11 (10.38%)	65 (61.32%)	30 (28.30%)	106 (26.50%)
9 & above	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	0 (0%)	0 (0%)	58 (14.50%)	150 (37.50%)	192 (48.00%)	400 (100%)
Marital Status (MS)	Loan Size (LS)					Total
	(5000-10,000)	(10,000-15,000)	(15,000-20,000)	(20,000-25,000)	(25,000-more)	N (f)
Unmarried	0 (0%)	0 (0%)	0 (0%)	0 (0%)	20 (100%)	20 (5.00%)
Married	0 (0%)	0 (0%)	37 (19.89%)	65 (34.95%)	84 (45.16%)	186 (46.50%)
Widow	0 (0%)	0 (0%)	21 (19.81%)	48 (45.28%)	37 (34.91%)	106 (26.50%)
Divorce	0 (0%)	0 (0%)	0 (0%)	22 (46.81%)	25 (53.19%)	47 (11.75%)
Separated	0 (0%)	0 (0%)	0 (0%)	15 (36.59%)	26 (63.41%)	41 (10.25%)
Total	0 (0%)	0 (0%)	58 (14.50%)	150 (37.50%)	192 (48.00%)	400 (100%)
Personal Annual Income (PAI)	Loan Size (LS)					Total
	(5000-10,000)	(10,000-15,000)	(15,000-20,000)	(20,000-25,000)	(25,000-more)	N (f)
(Less than 49,000)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	14 (100.00%)	14 (3.50%)
(50,000-99,000)	0 (0%)	0 (0%)	0 (0%)	26 (28.57%)	65 (71.43%)	91 (22.75%)
(100,000-149,000)	0 (0%)	0 (0%)	21 (28.77%)	37 (50.68%)	15 (20.55%)	73 (18.25%)
(150,000-199,000)	0 (0%)	0 (0%)	26 (15.95%)	87 (53.37%)	50 (30.67%)	163 (40.75%)
(200,000-more)	0 (0%)	0 (0%)	11 (18.64%)	0 (0%)	48 (81.36%)	59 (14.75%)
Total	0 (0%)	0 (0%)	58 (14.50%)	150 (37.50%)	192 (48.00%)	400 (100%)

**Table 4.43**  
*Profile of Aggregate Personal Empowerment (PEagg) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Personal Empowerment (PEagg)			Total
	No ability	Sometimes ability	Full ability	N (f)
(18-25)	0 (0%)	20 (100%)	0 (0%)	20 (5.00%)
(26-35)	35 (17.24%)	147 (72.41%)	21 (10.34%)	203 (50.75%)
(36-45)	15 (17.65%)	70 (82.35%)	0 (0%)	85 (21.25%)
(46-55)	0 (0%)	11 (29.73%)	26 (70.27%)	37 (9.25%)
(56-65)	0 (0%)	44 (80.00%)	11 (20.00%)	55 (13.75%)
Total	50 (12.50%)	292 (73.00%)	58 (14.50%)	400 (100%)
Education (EDU)	Personal Empowerment (PEagg)			Total
	No ability	Sometimes ability	Full ability	N (f)
Illiterate	0 (0%)	45 (54.88%)	37 (45.12%)	82 (20.50%)
Primary	30 (25.42%)	77 (65.25%)	11 (9.32%)	118 (29.50%)
Secondary	20 (12.82%)	126 (80.77%)	10 (6.41%)	156 (39.00%)
Higher. Sec	0 (0%)	22 (7.53%)	0 (0%)	22 (5.50%)
Degree	0 (0%)	22 (7.53%)	0 (0%)	22 (5.50%)
Total	50 (12.50%)	292 (73.00%)	58 (14.50%)	400 (100%)
Family Size(FS)	Personal Empowerment (PEagg)			Total
	No ability	Sometimes ability	Full ability	N (f)
1-2 members	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3-4 members	0 (0%)	40 (64.52%)	22 (35.48%)	62 (15.50%)
5-6 members	30 (12.93%)	181 (78.02%)	21 (9.05%)	232 (58.00%)
7-8 members	20 (18.87%)	71 (66.98%)	15 (14.15%)	106 (26.50%)
9 & above	0 (0%)	0 (0%)	0 (0%)	0(0%)
Total	50 (12.50%)	292 (73.00%)	58 (14.50%)	400 (100%)
Marital Status (MS)	Personal Empowerment (PEagg)			Total
	No ability	Sometimes ability	Full ability	N (f)
Unmarried	0 (0%)	20 (100%)	0 (0%)	20 (5.00%)
Married	50 (26.88%)	115 (61.83%)	21 (11.29%)	186 (46.50%)
Widow	0 (0%)	91 (85.85%)	15 (14.15%)	106 (26.50%)
Divorce	0 (0%)	36 (76.60%)	11 (23.40%)	47 (11.75%)
Separated	0 (0%)	30 (73.17%)	11 (26.83%)	41 (10.25%)
Total	50 (12.50%)	292 (73%)	58 (14.50%)	400 (100%)
Personal Annual Income (PAI)	Personal Empowerment (PEagg)			Total
	No ability	Sometimes ability	Full ability	N (f)
(Less than 49,000)	0 (0%)	14 (100 %)	0 (0 %)	14 (3.50%)
(50,000-99,000)	0 (0 %)	59 (64.84 %)	32 (35.16%)	19 (22.75%)
(100,000-149,000)	15 (20.55 %)	43 (58.90 %)	15 (20.55 %)	73 (18.25 %)
(150,000-199,000)	35 (21.47 %)	128 (78.53%)	0 (0 %)	163 (40.75 %)
(200,000-more)	0 (0 %)	48 (81.36 %)	11 (18.64%)	59 (14.75%)
Total	50 (12.50 %)	292 (73.00%)	58 (14.50 %)	400 (100 %)

Table 4.44  
*Profile of Economic Decision Making (EDM) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Economic Decision Making (EDM)			Total
	No ability	Sometimes ability	Full ability	
				N (f)
(18-25)	0 (0%)	20 (100 %)	0 (0%)	20 (5.00 %)
(26-35)	35 (17.24 %)	153 (75.37 %)	15 (7.39%)	203 (50.75%)
(36-45)	15 (17.65 %)	50 (58.82 %)	20 (23.53%)	85 (21.25 %)
(46-55)	0 (0 %)	11 (29.73 %)	26 (70.27 %)	37 (9.25 %)
(56-65)	0 (0%)	40 (72.73 %)	15 (27.27 %)	55 (13.75%)
Total	50 (12.50 %)	274 (68.50 %)	76 (19.00 %)	400 (100 %)
Education (EDU)	Economic Decision Making (EDM)			Total
	No ability	Sometimes ability	Full ability	N (f)
Illiterate	0 (0 %)	41 (50.00 %)	41 (50.00 %)	82 (20.50 %)
Primary	30 (25.42 %)	88 (74.58 %)	0 (0 %)	118 (29.50 %)
Secondary	20 (12.82 %)	101 (64.74 %)	35 (22.44 %)	156 (39.00 %)
Higher. Sec	0 (0 %)	22 (100 %)	0 (0 %)	22 (5.50 %)
Degree	0 (0 %)	22 (100 %)	0 (0 %)	22 (5.50 %)
Total	50 (12.50 %)	274 (68.50 %)	76 (19.00 %)	400 (100 %)
Family Size(FS)	Economic Decision Making (EDM)			Total
	No ability	Sometimes ability	Full ability	N (f)
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
3-4 members	0 (0 %)	51 (82.26 %)	11 (17.74 %)	62 (15.50 %)
5-6 members	30 (12.93 %)	167 (71.98 %)	35 (15.09 %)	232 (58.00%)
7-8 members	20 (18.87 %)	56 (52.83 %)	30 (28.30 %)	106 (26.50 %)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	50 (12.50 %)	274 (68.50 %)	76 (19.00 %)	400 (100 %)
Marital Status (MS)	Economic Decision Making (EDM)			Total
	No ability	Sometimes ability	Full ability	N (f)
Unmarried	0 (0 %)	20 (100 %)	0 (0 %)	20 (5.00 %)
Married	50 (26.88 %)	136 (73.12 %)	0 (0%)	186 (46.50 %)
Widow	0 (0 %)	76 (71.70 %)	30 (28.30 %)	106 (26.50%)
Divorce	0 (0 %)	27 (57.45 %)	20 (42.55 %)	47 (11.75 %)
Separated	0 (0 %)	15 (36.59 %)	26 (63.41 %)	41 (10.25 %)
Total	50 (12.50 %)	274 (68.50 %)	76 (19.00 %)	400 (100 %)
Personal Annual Income (PAI)	Economic Decision Making (EDM)			Total
	No ability	Sometimes ability	Full ability	N (f)
(Less than 49,000)	0 (0 %)	14 (100 %)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	0 (0 %)	76 (83.52 %)	15 (16.48 %)	91 (22.75 %)
(100,000-149,000)	15 (20.55 %)	23 (31.51 %)	35 (47.95 %)	73 (18.25 %)
(150,000-199,000)	35 (21.47 %)	113 (69.33 %)	15 (9.20 %)	163 (40.75 %)
(200,000-more)	0 (0 %)	48 (81.36 %)	11 (18.64 %)	59 (14.75 %)
Total	50 (12.50 %)	274 (68.50 %)	76 (19.00 %)	400 (100 %)

Table 4.45  
*Profile of Freedom of Movement (FOM) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Freedom of Movement (FOM)			Total
	No ability	Sometimes ability	Full ability	
				N (f)
(18-25)	0 (0 %)	20 (100 %)	0 (0 %)	20 (5.00 %)
(26-35)	0 (0 %)	160 (78.82 %)	43 (21.18 %)	203 (50.75 %)
(36-45)	30 (35.29 %)	55 (64.71 %)	0 (0 %)	85 (21.25 %)
(46-55)	0 (0 %)	11 (29.73 %)	26 (70.27 %)	37 (9.25 %)
(56-65)	14 (25.45 %)	30 (54.55 %)	11 (20.00 %)	55 (13.75 %)
Total	44 (11.00 %)	276 (69.00 %)	80 (20.00 %)	400 (100 %)
Education (EDU)	Freedom of Movement (FOM)			Total
	No ability	Sometimes ability	Full ability	N (f)
Illiterate	15 (18.29 %)	30 (36.59 %)	37 (45.12 %)	82 (20.50 %)
Primary	29 (24.58 %)	78 (66.10 %)	11 (9.32 %)	118 (29.50 %)
Secondary	0 (0 %)	146 (93.59 %)	10 (6.41 %)	156 (39.00 %)
Higher. Sec	0 (0 %)	22 (100 %)	0 (0 %)	22 (5.50 %)
Degree	0 (0 %)	0 (0 %)	22 (100 %)	22 (5.50 %)
Total	44 (11.00 %)	276 (69.00 %)	80 (20.00 %)	400 (100 %)
Family Size(FS)	Freedom of Movement (FOM)			Total
	No ability	Sometimes ability	Full ability	N (f)
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
3-4 members	14 (22.58 %)	26 (41.94 %)	22 (35.48 %)	62 (15.50 %)
5-6 members	30 (12.93 %)	159 (68.53 %)	43 (18.53 %)	232 (58.00 %)
7-8 members	0 (0 %)	91 (85.85 %)	15 (14.15 %)	106 (26.50 %)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	44 (11.00 %)	276 (69.00 %)	80 (20.00 %)	400 (100 %)
Marital Status (MS)	Freedom of Movement (FOM)			Total
	No ability	Sometimes ability	Full ability	N (f)
Unmarried	0 (0 %)	20 (100.00 %)	0 (0 %)	20 (5.00 %)
Married	30 (16.13 %)	113 (60.75 %)	43 (23.12 %)	186 (46.50 %)
Widow	0 (0 %)	91 (85.85 %)	15 (14.15 %)	106 (26.50 %)
Divorce	14 (29.79 %)	22 (46 %)	11 (23.40 %)	47 (11.75 %)
Separated	0 (0 %)	30 (73.17 %)	11 (26.83 %)	41 (10.25 %)
Total	44 (11.00 %)	276 (69.00 %)	80 (20.00 %)	400 (100 %)
Personal Annual Income (PAI)	Freedom of Movement (FOM)			Total
	No ability	Sometimes ability	Full ability	N (f)
(Less than 49,000)	14 (100 %)	0 (0 %)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	0 (0 %)	59 (64.84 %)	32 (35.16 %)	91 (22.75 %)
(100,000-149,000)	15 (20.55 %)	43 (58.90 %)	15 (20.55 %)	73 (18.25 %)
(150,000-199,000)	15 (9.20 %)	148 (90.80 %)	0 (0 %)	163 (40.75 %)
(200,000-more)	0 (0 %)	26 (44.07 %)	33 (55.93 %)	59 (14.75 %)
Total	44 (11.00 %)	276 (69.00 %)	80 (20.00 %)	400 (100 %)

Table 4.46  
*Profile of Political Socio-cultural Awareness (PSA) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Political Socio-cultural Awareness (PSA)			Total N (f)
	No ability	Sometimes ability	Full ability	
(18-25)	20 (100 %)	0 (0 %)	0 (0 %)	20 (5.00 %)
(26-35)	35 (17.24 %)	125 (61.58 %)	43 (21.18 %)	203 (50.75 %)
(36-45)	15 (17.65 %)	70 (82.35 %)	0 (0 %)	85 (21.25 %)
(46-55)	0 (0 %)	11 (29.73 %)	26 (70.27 %)	37 (9.25 %)
(56-65)	0 (0 %)	29 (52.73 %)	26 (47.27 %)	55 (13.75 %)
Total	70 (17.50 %)	235 (58.75 %)	95 (23.75 %)	400 (100 %)
Education (EDU)	Political Socio-cultural Awareness (PSA)			Total N (f)
	No ability	Sometimes ability	Full ability	
Illiterate	0 (0 %)	30 (36.59%)	52 (63.41 %)	82 (20.50 %)
Primary	30 (25.42 %)	77 (65.25 %)	11 (9.32 %)	118 (29.50 %)
Secondary	40 (25.64 %)	84 (53.85 %)	32 (20.51 %)	156 (39.00 %)
Higher. Sec	0 (0 %)	22 (100 %)	0 (0 %)	22 (5.50 %)
Degree	0 (0 %)	22 (100 %)	0 (0 %)	22 (5.50 %)
Total	70 (17.50 %)	235 (58.75 %)	95 (23.75 %)	400 (100 %)
Family Size(FS)	Political Socio-cultural Awareness (PSA)			Total N (f)
	No ability	Sometimes ability	Full ability	
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
3-4 members	0 (0 %)	40 (64.52 %)	22 (35.48 %)	62 (15.50 %)
5-6 members	50 (21.55 %)	139 (59.91 %)	43 (18.53 %)	232 (58.00 %)
7-8 members	20 (18.87 %)	56 (52.83 %)	30 (28.30 %)	106 (26.50 %)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	70 (17.50 %)	235 (58.75 %)	95 (23.75 %)	400 (100 %)
Marital Status (MS)	Political Socio-cultural Awareness (PSA)			Total N (f)
	No ability	Sometimes ability	Full ability	
Unmarried	20 (100 %)	0 (0 %)	0 (0 %)	20 (5.00 %)
Married	50 (26.88 %)	115 (61.83 %)	21 (11.29 %)	186 (46.50 %)
Widow	0 (0 %)	69 (65.09 %)	37 (34.91 %)	106 (26.50 %)
Divorce	0 (0 %)	36 (76.60 %)	11 (23.40 %)	47 (11.75 %)
Separated	0 (0 %)	15 (36.59 %)	26 (63.41 %)	41 (10.25 %)
Total	70 (17.50 %)	235 (58.75 %)	95 (23.75 %)	400 (100 %)
Personal Annual Income (PAI)	Political Socio-cultural Awareness (PSA)			Total N (f)
	No ability	Sometimes ability	Full ability	
(Less than 49,000)	0 (0 %)	14 (100 %)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	0 (0 %)	48 (52.75 %)	43 (47.25 %)	91 (22.75 %)
(100,000-149,000)	15 (20.55 %)	32 (43.84 %)	26 (35.62 %)	73 (18.25 %)
(150,000-199,000)	55 (33.74 %)	93 (57.06 %)	15 (9.20 %)	163 (40.75 %)
(200,000-more)	0 (0 %)	48 (81.36 %)	11 (18.64 %)	59 (14.75 %)
Total	70 (17.50 %)	235 (58.75 %)	95 (23.75 %)	400 (100%)



Table 4.47

*Profile of Quality of Life (QOL) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Quality of Life (QOL)			Total
	Worsen QOL	Same QOL	Improved QOL	N (f)
(18-25)	1 (5.00 %)	19 (95.00 %)	0 (0 %)	20 (5.00 %)
(26-35)	37 (18.23 %)	123 (60.59 %)	43 (21.18 %)	203 (50.75 %)
(36-45)	29 (34.12 %)	56 (65.88 %)	0 (0 %)	85 (21.25 %)
(46-55)	2 (5.41 %)	27 (72.97 %)	8 (21.62 %)	37 (9.25 %)
(56-65)	11 (20.00 %)	27 (49.09 %)	17 (30.91 %)	55 (13.75 %)
Total	80 (20.00 %)	252 (63.00 %)	68 (17.00 %)	400 (100 %)
Education (EDU)	Quality of Life (QOL)			Total
	Worsen QOL	Same QOL	Improved QOL	N (f)
Illiterate	11 (13.41 %)	46 (56.10 %)	25 (30.49 %)	82 (20.50 %)
Primary	29 (24.58 %)	62 (52.54 %)	27 (22.88 %)	118 (29.50 %)
Secondary	38 (24.36 %)	118 (75.64 %)	0 (0.00 %)	156 (39.00 %)
Higher. Sec	2 (9.09 %)	20 (90.91 %)	0 (0 %)	22 (5.50 %)
Degree	0 (0 %)	6 (27.27 %)	16 (72.73%)	22 (5.50 %)
Total	80 (20.00 %)	252 (63.00 %)	68 (17.00 %)	400 (100 %)
Family Size(FS)	Quality of Life (QOL)			Total
	Worsen QOL	Same QOL	Improved QOL	N (f)
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
3-4 members	7 (11.29 %)	37 (59.68 %)	18 (29.03 %)	62 (15.50 %)
5-6 members	58 (25.00 %)	150 (64.66 %)	24 (10.34 %)	232 (58.00 %)
7-8 members	15 (14.15 %)	65 (61.32 %)	26 (24.53 %)	106 (26.50 %)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	80 (20.00 %)	252 (63.00 %)	68 (17.00 %)	400 (100 %)
Marital Status (MS)	Quality of Life (QOL)			Total
	Worsen QOL	Same QOL	Improved QOL	N (f)
Unmarried	1 (5 %)	19 (95 %)	0 (0 %)	20 (5 %)
Married	40 (21.51 %)	103 (55.38 %)	43 (23.12 %)	186 (46.50 %)
Widow	15 (14.15 %)	91 (85.85 %)	0 (0 %)	106 (26.50%)
Divorce	13 (27.66%)	26 (55.32 %)	8 (17.02 %)	47 (11.75%)
Separated	11 (26.83 %)	13 (31.71 %)	17 (41.46 %)	41 (10.25%)
Total	80 (20%)	252 (63%)	68 (17 %)	400 (100%)
Personal Annual Income (PAI)	Quality of Life (QOL)			Total
	Worsen QOL	Same QOL	Improved QOL	N (f)
(Less than 49,000)	5 (35.71%)	9 (64.29%)	0 (0 %)	14 (3.50%)
(50,000-99,000)	16 (17.58 %)	57 (62.64%)	18 (19.78 %)	91 (22.75 %)
(100,000-149,000)	28 (38.36 %)	45 (61.64 %)	0 (0%)	73 (18.25%)
(150,000-199,000)	28 (17.18 %)	109 (66.87%)	26 (15.95 %)	163 (40.75 %)
(200,000-more)	3 (5.08 %)	32 (54.24%)	24 (40.68%)	59 (14.75 %)
Total	80 (20%)	252 (63%)	68 (17 %)	400 (100%)

Table 4.48

*Profile of Health Life Improvement (HLI) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Health Life Improvement (HLI)			Total N (f)
	Worsen HLI	Same HLI	Improved HLI	
(18-25)	4 (20%)	16 (80%)	0 (0%)	20 (5 %)
(26-35)	23 (11.33 %)	84 (41.38 %)	96 (47.29 %)	203 (50.75%)
(36-45)	10 (11.76%)	62 (72.94 %)	13 (15.29%)	85 (21.25%)
(46-55)	9 (24.32%)	18 (48.65 %)	10 (27.03%)	37 (9.25 %)
(56-65)	5 (9.09%)	27 (49.09%)	23 (41.82%)	55 (13.75 %)
Total	51 (12.75%)	207 (51.75 %)	142 (35.50%)	400 (100%)
Education (EDU)	Health Life Improvement (HLI)			Total
	Worsen HLI	Same HLI	Improved HLI	N (f)
Illiterate	12 (14.63%)	24 (29.27%)	46 (56.10%)	82 (20.50%)
Primary	14 (11.86 %)	58 (49.15%)	46 (38.98%)	118 (29.50%)
Secondary	21 (13.46 %)	106 (67.95%)	29 (18.59 %)	156 (39 %)
Higher. Sec	3 (13.64%)	19 (86.36 %)	0 (0 %)	22 (5.50 %)
Degree	1 (4.55%)	0 (0 %)	21 (95.45%)	22 (5.50%)
Total	51 (12.75 %)	207 (51.75%)	142 (35.50 %)	400 (100%)
Family Size(FS)	Health Life Improvement (HLI)			Total
	Worsen HLI	Same HLI	Improved HLI	N (f)
1-2 members	0 (0%)	0 (0%)	0 (0 %)	0 (0 %)
3-4 members	7 (11.29 %)	13 (20.97%)	42 (67.74%)	62 (15.50 %)
5-6 members	30 (12.93 %)	143 (61.64%)	59 (25.43%)	232 (58%)
7-8 members	14 (13.21 %)	51 (48.11%)	41 (38.68%)	106 (26.50%)
9 & above	0 (0%)	0 (0%)	0 (0 %)	0 (0 %)
Total	51 (12.75 %)	207 (51.75 %)	142 (35.50%)	400 (100 %)
Marital Status (MS)	Health Life Improvement (HLI)			Total
	Worsen HLI	Same HLI	Improved HLI	N (f)
Unmarried	4 (20 %)	16 (80 %)	0 (0 %)	20 (5 %)
Married	24 (12.90 %)	63 (33.87 %)	99 (53.23 %)	186 (46.50 %)
Widow	15 (14.15 %)	81 (76.42 %)	10 (9.43 %)	106 (26.50 %)
Divorce	5 (9.80 %)	33 (70.21 %)	9 (19.15 %)	47 (11.75 %)
Separated	3 (7.32 %)	14 (34.15 %)	24 (58.54 %)	41 (10.25 %)
Total	51(12.75 %)	207 (51.75 %)	142 (35.50 %)	400 (100 %)
Personal Annual Income (PAI)	Health Life Improvement (HLI)			Total
	Worsen HLI	Same HLI	Improved HLI	N (f)
(Less than 49,000)	1 (7.14 %)	13 (92.86 %)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	14 (15.38 %)	43 (47.25 %)	34 (37.36 %)	91 (22.75 %)
(100,000-149,000)	10 (13.70 %)	53 (72.60 %)	10 (13.70 %)	73 (18.25 %)
(150,000-199,000)	20 (12.27 %)	89 (54.60 %)	54 (33.13 %)	163 (40.75 %)
(200,000-more)	6 (10.17 %)	9 (15.25 %)	44 (74.58 %)	59 (14.75 %)
Total	51 (12.75 %)	207 (51.75 %)	142 (35.50 %)	400 (100 %)

Table 4.49  
*Profile of Economic Life Improvement (ELI) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Economic Life Improvement (ELI)			Total N (f)
	Worsen ELI	Same ELI	Improved ELI	
(18-25)	0 (0 %)	0 (0%)	20 (8.55 %)	20 (5 %)
(26-35)	22 (10.84 %)	55 (27.09 %)	126 (62.07 %)	203 (50.75%)
(36-45)	22 (25.88 %)	34 (40 %)	29 (34.12 %)	85 (21.25 %)
(46-55)	3 (8.11 %)	0 (0 %)	34 (91.89 %)	37 (9.25 %)
(56-65)	1 (1.82 %)	29 (52.73 %)	25 (45.45 %)	55 (13.75 %)
Total	48 (12 %)	118 (29.50 %)	234 (58.50 %)	400 (100 %)
Education (EDU)	Economic Life Improvement (ELI)			Total
	Worsen ELI	Same ELI	Improved ELI	N (f)
Illiterate	1 (1.22 %)	30 (36.59 %)	51 (62.20 %)	82 (20.50 %)
Primary	24 (20.34 %)	28 (23.73 %)	66 (55.93 %)	118 (29.50 %)
Secondary	20 (12.82 %)	60 (38.46 %)	76 (48.72 %)	156 (39 %)
Higher. Sec	2 (9.09 %)	0 (0 %)	20 (90.91 %)	22 (5.50 %)
Degree	1 (4.55 %)	0 (0 %)	21 (95.45 %)	22 (5.50 %)
Total	48 (12 %)	118 (29.50 %)	234 (58.50 %)	400 (100 %)
Family Size(FS)	Economic Life Improvement (ELI)			Total
	Worsen ELI	Same ELI	Improved ELI	N (f)
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
3-4 members	3 (4.84 %)	14 (22.58 %)	45 (72.58 %)	62 (15.50 %)
5-6 members	40 (17.24 %)	70 (30.17 %)	122 (52.59 %)	232 (58 %)
7-8 members	5 (4.72 %)	34 (32.08 %)	67 (63.21 %)	106 (26.50 %)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	48 (12 %)	118 (29.50 %)	234 (58.50 %)	400 (100 %)
Marital Status (MS)	Economic Life Improvement (ELI)			Total
	Worsen ELI	Same ELI	Improved ELI	N (f)
Unmarried	0 (0 %)	0 (0 %)	20 (8.55 %)	20 (5 %)
Married	28 (15.05 %)	56 (30.11 %)	102 (54.84 %)	186 (46.50 %)
Widow	7 (6.60 %)	23 (21.70 %)	76 (71.70%)	106 (26.50%)
Divorce	3 (6.38%)	33 (70.21%)	11 (23.40%)	47 (11.75%)
Separated	10 (20.38%)	6 (14.63%)	25 (60.98 %)	41 (10.25%)
Total	48 (12%)	118 (29.50%)	234 (58.50 %)	400 (100%)
Personal Annual Income (PAI)	Economic Life Improvement (ELI)			Total
	Worsen ELI	Same ELI	Improved ELI	N (f)
(Less than 49,000)	0 (0%)	14 (100%)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	17 (18.68 %)	14 (15.38 %)	60 (65.93%)	91 (22.75 %)
(100,000-149,000)	20 (27.40 %)	27 (36.99 %)	26 (35.62%)	73 (18.25%)
(150,000-199,000)	8 (4.91 %)	63 (38.65 %)	92 (56.44 %)	163 (40.75 %)
(200,000-more)	3 (5.08%)	0 (0%)	56 (94.92%)	59 (14.75 %)
Total	48 (12 %)	118 (29.50%)	234 (58.50 %)	400 (100%)

Table 4.50  
*Profile of Familial Life Improvement (FLI) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Familial Life Improvement (ELI)			Total N (f)
	Worsen FLI	Same FLI	Improved FLI	
(18-25)	0 (0 %)	0 (0%)	20 (100 %)	20 (5%)
(26-35)	15 (7.39%)	81 (39.90 %)	107 (52.71%)	203 (50.75%)
(36-45)	0 (0%)	74 (87.06%)	11 (12.94 %)	85 (21.25%)
(46-55)	0 (0%)	15 (40.54 %)	22 (59.46%)	37 (9.25%)
(56-65)	0 (0%)	29 (52.73 %)	26 (47.27%)	55 (13.75%)
Total	15 (3.75%)	199 (49.75%)	186 (46.50%)	400 (100 %)
Education (EDU)	Familial Life Improvement (ELI)			Total
	Worsen FLI	Same FLI	Improved FLI	N (f)
Illiterate	0 (0 %)	45 (54.88 %)	37 (45.12 %)	82 (20.50%)
Primary	0 (0 %)	44 (37.29%)	74 (62.71%)	118 (29.50%)
Secondary	15 (9.62 %)	88 (56.41 %)	53 (33.97 %)	156 (39%)
Higher. Sec	0 (0 %)	22 (100 %)	0 (0%)	22 (5.50 %)
Degree	0 (0 %)	0 (0 %)	22 (100%)	22 (5.50%)
Total	15 (3.75%)	199 (49.75%)	186 (46.50%)	400 (100 %)
Family Size(FS)	Familial Life Improvement (ELI)			Total
	Worsen FLI	Same FLI	Improved FLI	N (f)
1-2 members	0 (0 %)	0 (0%)	0 (0%)	0 (0%)
3-4 members	15 (24.19%)	14 (22.58 %)	33 (53.23 %)	62 (15.50%)
5-6 members	0 (0 %)	135 (58.19 %)	97 (41.81 %)	232 (58%)
7-8 members	0 (0%)	50 (47.17 %)	56 (52.83 %)	106 (26.50%)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Total	15 (3.75%)	199 (49.75%)	186 (46.50%)	400 (100 %)
Marital Status (MS)	Familial Life Improvement (ELI)			Total
	Worsen FLI	Same FLI	Improved FLI	N (f)
Unmarried	0 (0 %)	0(0 %)	20 (100 %)	20 (5 %)
Married	15 (8.06%)	75 (40.32 %)	96 (51.61 %)	186 (46.50 %)
Widow	0 (0 %)	73 (58.87 %)	33 (31.13 %)	106 (26.50 %)
Divorce	0 (0 %)	36 (76.60 %)	11 (23.40 %)	47 (11.75 %)
Separated	0 (0 %)	15 (36.59 %)	26 (63.41 %)	41 (10.25 %)
Total	15 (3.75%)	199 (49.75%)	186 (46.50%)	400 (100 %)
Personal Annual Income (PAI)	Familial Life Improvement (ELI)			Total
	Worsen FLI	Same FLI	Improved FLI	N (f)
(Less than 49,000)	0 (0 %)	14(100 %)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	0 (0 %)	25 (27.47 %)	66 (72.53 %)	91 (22.75 %)
(100,000-149,000)	0 (0 %)	73 (100 %)	0 (0 %)	73 (18.25 %)
(150,000-199,000)	0 (0 %)	87 (53.37%)	76 (46.63 %)	163 (40.75 %)
(200,000-more)	15 (25.42 %)	0 (0 %)	44 (74.58%)	59 (14.75 %)
Total	15 (3.75%)	199 (49.75%)	186 (46.50%)	400 (100 %)

Table 4.51  
*Profile of Household Life Improvement (HHLI) and Socio-Demographic Characteristics of Respondents*

Age (AGE)	Household Life Improvement (HHLI)			Total N (f)
	Worsen HHLI	Same HHLI	Improved HHLI	
(18-25)	3 (15 %)	0(0 %)	17(85 %)	20 (5 %)
(26-35)	43 (21.18 %)	69 (33.99 %)	91 (44.83 %)	203 (50.75%)
(36-45)	14 (16.47 %)	62 (72.94 %)	9 (10.59%)	85 (21.25 %)
(46-55)	6 (16.22%)	13 (35.14 %)	18 (48.65 %)	37 (9.25 %)
(56-65)	7 (12.73%)	25 (45.45%)	23 (41.82 %)	55 (13.75%)
Total	73 (18.25 %)	169 (42.25 %)	158 (39.50%)	400 (100 %)
Education (EDU)	Household Life Improvement (HHLI)			Total
	Worsen HHLI	Same HHLI	Improved HHLI	N (f)
Illiterate	11(13.41%)	39 (47.56 %)	32 (39.02 %)	82 (20.50 %)
Primary	18 (15.25 %)	37 (31.36 %)	63 (53.39 %)	118 (29.50 %)
Secondary	37 (23.72 %)	76 (48.72 %)	43 (27.56 %)	156 (39 %)
Higher. Sec	5 (22.73 %)	17 (77.27 %)	0 (0 %)	22 (5.50 %)
Degree	2 (9.09 %)	0 (0%)	20 (90.91 %)	22 (5.50 %)
Total	73 (18.25 %)	169 (42.25 %)	158 (39.50%)	400 (100 %)
Family Size(FS)	Household Life Improvement (HHLI)			Total
	Worsen FLI	Same FLI	Improved FLI	N (f)
1-2 members	0 (0 %)	0 (0 %)	0 (0 %)	0(0 %)
3-4 members	24 (38.71 %)	12 (19.35 %)	26 (41.94 %)	62 (15.50 %)
5-6 members	34 (14.66 %)	114 (49.14 %)	84 (36.21 %)	232 (58%)
7-8 members	15 (14.15 %)	43 (40.57 %)	48 (45.28 %)	106 (26.50%)
9 & above	0 (0 %)	0 (0 %)	0 (0 %)	0 (0%)
Total	73 (18.25 %)	169 (42.25 %)	158 (39.50%)	400 (100 %)
Marital Status (MS)	Household Life Improvement (HHLI)			Total
	Worsen HHLI	Same HHLI	Improved HHLI	N (f)
Unmarried	3 (15 %)	0 (0 %)	17 (85 %)	20 (5 %)
Married	42 (22.58 %)	63 (33.87 %)	81 (43.55 %)	186 (46.50 %)
Widow	17 (16.04 %)	61 (57.55 %)	28 (26.42 %)	106 (26.50 %)
Divorce	5 (10.64 %)	32 (68.09 %)	10 (21.28 %)	47 (11.75 %)
Separated	6 (14.63 %)	13 (31.71 %)	22 (53.66 %)	41 (10.25%)
Total	73 (18.25 %)	169 (42.25 %)	158 (39.50%)	400 (100 %)
Personal Annual Income (PAI)	Household Life Improvement (HHLI)			Total
	Worsen HHLI	Same HHLI	Improved HHLI	N (f)
(Less than 49,000)	2 (14.29%)	12 (85.71%)	0 (0 %)	14 (3.50 %)
(50,000-99,000)	15 (16.48 %)	21 (23.08 %)	55 (60.44 %)	91 (22.75 %)
(100,000-149,000)	10 (13.70 %)	63 (86.30 %)	0 (0 %)	73 (18.25%)
(150,000-199,000)	25 (15.34 %)	73 (44.79 %)	65 (39.88 %)	163 (40.75 %)
(200,000-more)	21 (35.59 %)	0 (0%)	38 (64.41%)	59 (14.75 %)
Total	73 (18.25 %)	169 (42.25 %)	158 (39.50%)	400 (100 %)

## Descriptive Statistics Output on Stata

```

-----
|_/_/_/_/_/ (R)
|_|_|_|_|_| 13.0 Copyright 1985-2013 StataCorp LP
|_|_|_|_|_| Statistics/Data Analysis StataCorp
MP - Parallel Edition 4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)

```

3-user 8-core Stata network perpetual license:

Serial number: 501306208483

Licensed to: IDRE-UCLA

IDRE-UCLA

Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables

```
. use "C:\Users\Alfa A B\Desktop\Sana\Sana.dta", clear
```

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tabulate age loan_avail, column row
tabulate education loan_avail, column row
tabulate members loan_avail, column row
tabulate marital loan_avail, column row
tabulate income loan_avail, column row
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mlogtest, lr
mlogtest, wald
mlogtest, lrcomb
mlogtest, combine
mlogtest, hausman

```

STATA Commands

```

generate byte age=1 if age<=1
age=1 if age<=1
generate byte age=1 if age<=1
replace age=2 if AGE>1 & AGE<=2
replace age=3 if AGE>2 & AGE<=3

```



```

replace age=4 if AGE>3 & AGE<=4
replace age=5 if AGE>4 & AGE<.
Another method
generate byte agecat=recode(AGE,1,2,3,4,5)                                cat=category

reg LQL1 INCOME LOAN_AVAIL TRAINING
generate HLI=( HLI1+ HLI2+ HLI3+ HLI4)/4    (taking average)          avr=average
generate QOLavr=( HLI1+ HLI2+ HLI3+ HLI4+ ELI1+ ELI2+ ELI3+ ELI4+ FLI1+ FLI2+
FLI3+ FLI4+ LQL1+ LQL2+ LQL3+ LQL4+ LQL5+ LQL5i+ LQL5ii+ LQL5iii+ LQL5iv)/21
(taking average)
regress QOLavr AGE EDUCATION MEMBERS                                |QOLavr=
f(age, edu, ms)
replace QOLb=1 if QOLb<1.5
replace QOLb=2 if QOLb<2.5
replace QOLb=3 if QOLb>2.4
drop HLIsum
generate PEa=( edm+ fom+ psc)/3
mfx, predict(p outcome(1))          for marginal effect
mfx, predict(p outcome(2))
mfx, predict(p outcome(3))

PEagg= EDM+FOM+ PSA
QOLa = f(age education members marital income loan_avail training size PEagg)
.....1

QOLa = f(age education members marital income loan_avail training size edm fom
psa).....2

HLI = f(age education members marital income loan_avail training size
PEagg).....3

HLI = f(age education members marital income loan_avail training size edm fom
psa).....4

FLI = f(age education members marital income loan_avail training size
PEagg).....5

FLI = f(age education members marital income loan_avail training size edm fom
psa).....6

ELI = f(age education members marital income loan_avail training size
PEagg).....7

ELI = f(age education members marital income loan_avail training size edm fom
psa).....8

HHLI = f(age education members marital income loan_avail training size
PEagg).....9

HHLI = f(age education members marital income loan_avail training size edm fom
psa).....10

estat classification
Logistic model for mmm

```

		----- True -----			
Classified		D	~D		Total
-----+-----+-----+-----					
	+	252	148		400

-		0	0		0
-----+-----+-----					
Total		252	148		400

Classified + if predicted Pr(D) >= .5  
 True D defined as mmm != 0

Sensitivity	Pr( +  D)	100.00%
Specificity	Pr( - ~D)	0.00%
Positive predictive value	Pr( D  +)	63.00%
Negative predictive value	Pr(~D  -)	.%
-----		
False + rate for true ~D	Pr( + ~D)	100.00%
False - rate for true D	Pr( -  D)	0.00%
False + rate for classified +	Pr(~D  +)	37.00%
False - rate for classified -	Pr( D  -)	.%
-----		
Correctly classified		63.00%
-----		

. estat gof

Logistic model for mmm, goodness-of-fit test

number of observations = 400  
 number of covariate patterns = 10  
 Pearson chi2(6) = 52.22  
 Prob > chi2 = 0.0000

