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The influential factors in women's participation in the labor market of Herat city

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Abstract
One of the most important criteria for measuring the degree of development in a country is women's degree of importance and prestige. To achieve social development, accelerate the process of economic development, and attain social justice, women must be regarded as an active and constructive force, which will have a great impact on the development process, thereby increasing the quality and quantity of human resources within the community. The role of women in development largely depends on the goals of social and economic development and is fundamental to the evolution of all human societies. The present study aimed to evaluate the influential factors in women's participation in the labor market of Herat. By reviewing the literature and theoretical foundations, the influential factors in women's participation in the labor market were observed to be individual factors (marital status, number of children, number of people with income in the family, age, academic education, type of academic education, monthly expenses), economic factors (environmental/personal), social factors (environmental/personal), cultural factors (environmental/personal), and psychological factors. Moreover, the results of logit regression showed that the variables of marital status, monthly expenses, and social and environmental factors had a negative, significant effect on the probability of the participation to the non-participation of women in the labor market of Herat city. On the other hand, the variables of the number of children, number of people with income in the family, age, and education level had a positive, significant effect on the probability of the participation to the non-participation of women in the labor market of Herat city. The comparison of the total weight elasticities of the influential factors in women's participation in the labor market of Herat city indicated that the variable of education level most significantly affected women's participation, followed by the variables of environmental/social factors and age.

Keywords: logit model, labor market, women, herat city, participation

1. Introductions
Family economics and women's labor force have been the controversial sub-branches of economics in the past three decades. Within the past two centuries, the world has witnessed a new socioeconomic phenomenon known as women's participation in the labor market (Sarani *et al.*, 2014) [8]. Women's labor supply behavior has important implications for other phenomena, including marriage, fertility, divorce, household income distribution, and the gender pay gap. In addition, increasing women's employment could enhance countries' economic growth, reduce the gender pay gap, sex discrimination, and fertility, increase the time between marriage and the birth of the first child, reduce weekly working hours, increase urbanization, diminish inflation and unemployment, and improve the laws and practices in this regard (Mincer, 1962; Cynthia and Beth, 1979) [57, 44]. According to Okun's law, which is an empirical correlation for some advanced economies, every one percent increase in unemployment relative to the natural unemployment rate causes the gross domestic product (GDP) to decrease by a potential 2.5% compared to the potential GDP.
Unemployment describes the missed opportunities that could have led to increased production. As unemployment increases within a community, the gap between the potential and actual GDP (i.e., output gap) widens. Rising unemployment could also have different effects on the rate of human resource participation in economic activities. A higher unemployment rate is associated with a lower the participation rate in the long run due to the increased costs of job search (Osterholm, 2009) [59]. A low participation rate indicates that a significant percentage of the working age population has left the active population of the country and is not seeking productive activities. This issue may have various reasons, while it generally indicates the inability of the society to employ and manage human resources (Moshiri *et al.*, 2015) [31]. In the study of labor supply, the main question is the degree of

labor force participation in the market, as well as the time and the factors that determine the presence of individuals in the labor market. In the scientific texts of the labor market, the main influential factors in the labor force participation rate are personal characteristics (e.g., age, gender, education level, and income) and familial characteristics (e.g., family members' income, education level, marital status, employment, and family size) (Sohrabi, 1999) [10]. Familial characteristics have a greater impact on the participation rate of women compared to men. The correlation between age and participation is often nonlinear, with participation increasing at a young age due to income motivation and starting an independent life or a family, while it gradually decreases at an older age, especially in the retirement period.

Participation rate differs in between men and women, and women's participation rate has been reported to be lower compared to men. Some of the reasons for this issue are women's employment in domestic work or gender discrimination in the labor market to the detriment of women. Due to changing conditions of the labor market in different countries and the creation of equal work opportunities for women, their participation rate has been on the rise. Technological advancement is another influential factor in the higher rate of women's participation as it has made housework less time-consuming and less costly, thereby increasing the costs of staying home for women. Employment rate is also directly correlated with education level since higher education and increased skills are associated with the higher likelihood of employment and earning (Fair, 1970; Dalton *et al.*, 2008) [48, 45].

Participation rate is an important indicator of the labor market and is defined as the ratio of the active population in the labor market (employed and unemployed) to the number of the working age population. Participation rate is a cumulative indicator, which is influenced by the economic, social, and cultural conditions of a country as a significant indicator of evaluating the labor market and economy of a country. Since employment is obtained following production, it will increase the productive employment in a society, thereby decreasing unemployment, enhancing production and the national income, and facilitating economic growth and development (Moshiri *et al.*, 2015) [31]. The participation of women in the global labor force is on the rise, and some countries have increased the retirement age of women to the retirement age of men so that women could provide more job services. Since 1993, the retirement age for men and women has increased in numerous OECD countries (Siegrist *et al.*, 2006) [63].

The economic participation rate indicates the use of the active population of a country in economic activities, which demonstrates the utilization of human resource capacities. The thorough and correct utilization of human resources is an important goal of development, and women's participation in economic activities plays a key role in economic and social development. Accordingly, women could be extensively involved in the development process through offering their labor force, while their exclusion from this arena equals not using all the production facilities of the society and poor efficiency in the optimal allocation of resources, which negatively affect economic growth and development (Mila Elmi *et al.*, 2014) [34]. Although the presence of women in economic activities is still lower than men, the increase in women's participation in the labor market has been a significant phenomenon in recent years. The entry of a large number of educated women into the labor market, their higher participation rate, and the disparity between supply and demand for women's participation in economic activities highlight the importance of investigating the influential factors in women's participation rate, such as their education level (Mila Elmi *et al.*, 2014) [34].

According to, women play a pivotal role in the production and reproduction of activities in every country, as well as in the development process. Notably, women constitute 40% of the world's workforce. According to Al-Butma, countries with high levels of female labor force participation are expected to make further progress. However, several challenges are recognized in this regard, such as fewer employment opportunities, inequality and lack of gender equality, cultural and social barriers, lack of integration of work activities, and low wages (Abbasi Asfjir and Rezaei Roshan, 2017) [14]. In addition, reliable demographic characteristics such as age, marital status, religion, education level, income, residential area, and spousal support are known to affect women's participation in the workforce (Verick, 2014) [64].

While in developed countries women have increased their share of employment and professional occupations on a large scale, the role of women in agriculture, unpaid domestic work, and informal activities are more prevalent in developing countries. In some developing countries, women's participation in services and industries could be further increased. Some of the influential factors in this process are better education, changes in daily needs, and export/service industries. Observations indicate a significant correlation between globalization, flexibility, and increasing the role of women as a key influential factor in the global labor market across the world (Alaeddini and Razavi, 2004) [18]. The extent and manner of participation of various segments of the society (including women) in social and economic activities are important indicators of economic development and the modernization of the national economy. Although the need for women's employment and participation is currently a pressing issue in different countries, no acceptable balance has been achieved between the activities of men and women in developing countries. The present study was inspired by the need to pay special attention to the situation of women, emphasis on social justice, improving the situation of women's labor, creating welfare for women in the Afghan labor market, and a lack of scientific and analytical approaches in this regard.

2. Theoretical Foundation

Employment is one of the closest demographic concepts to the category of economic growth and development as the burden of care and employment rate have a profound effect on the economic status of every country. The higher employment rate of a country than its active population is associated with a lower hidden unemployment rate and the faster evolution of the national economy toward equilibrium. On the other hand, a wider gap between the employment ratio and the active population of a country causes more anomalies in the economic growth and development process of the country, thereby decreasing its growth rate (Sadeghi and Emadzadeh, 2004) [12].

The role of women's employment in the dynamics of human life is undeniable, and this factor is considered the center of

human and social relations. Constituting half of the population, women directly impact the development of the society since the ultimate goal of every society is to maximize social welfare, and social welfare is a function of per capita income, equitable income distribution, and the improvement of education, health, welfare facilities, and the social, economic, cultural, and political participation of men and women (Yazdkhasti, 2007) [40].

2.1 Theories on the Situation of Women in the Labor Market

In the labor market, men and women have different conditions in terms of the type of jobs, employment status, participation rate, and work income. Three groups of theories have been proposed to explain the situation of women in the labor market, including neoclassical theories, theories of the labor market decay, and gender theories.

In the neoclassical theories to explain gender differences and the reasons for the limited employment opportunities and income of women's work, emphasis is on variables such as family responsibilities, physical strength, general education, technical education, working hours, absenteeism, and relocation at work affecting productivity and supply work. A major advantage of classical economists is that in competitive conditions, workers are paid the equivalent of the final value of the product. According to this hypothesis, the income difference between men and women is either due to the lower productivity of women or market failures. Based on this theory, women earn less than men because they benefit from less human capital (mainly education) and have lower labor productivity as a result. For instance, employers are said to be reluctant to invest in women's skills since some women leave their job to marry or conceive/raise children. Parents and women themselves are also less motivated to invest in vocational education. The existence of periods when women retire from work and exit the labor market shows that they gain less work experience compared to men, and the severity of the erosion of their skills is higher as well (Anker, 1998) [41].

In the second group of the theories in this regard, the dual labor market theory describes the labor market disintegration. It is a theory that distinguishes between two types of occupations, including first-sector jobs that are relatively well-paid, have a higher funding, and provide more opportunities for progress, and secondary-sector jobs that have lower wages, lower job security, and less favorable working conditions (Anker *et al.*, 2003; p. 12) [42]. In first-sector occupations, the skills of the workers are commensurate with the needs of the desired economic unit. As a result of the employer's need for stability, the labor force is paid better wages, and there is a prospect of further progress. In these occupations, the stability of the worker at work is important to the employer, and the greater displacement in women shows that they are more likely to be recruited to second-class occupations. Even if the quality of manpower before entering a job is equal in this category, men are more likely than women to be employed in first-section occupations since they are more likely to make progress in terms of wages, vocational training, and promotion (Work, 2000; p. 21).

As for the third category of the theories in this regard, gender theories hold the main assumption that the position of women in the labor market, home, and family are interrelated as part of a general social system in which women are subordinate to men. The important point in these theories is the assignment of housework (especially child care) to women. These theories emphasize that the tendency toward female-dominated occupations is a reflection of women's domestic role, as well as the fact that these occupations and skills are devalued in most female domestic work societies. In fact, the skills required for some female-dominated jobs may not be less than male-dominated jobs (for which they are paid more). However, these jobs are underestimated since women are more skilled in them. In addition, the tendency of job evaluation systems in determining the value of work is that the characteristics attributed to men (e.g., physical strength) are held in higher regard in terms of the required skills and patience (Mila Elmi *et al.*, 2014) [34].

In most parts of the world, women mostly tend to focus on specific occupations such as teaching or nursing, which are compatible with their housework, or on user industries in the export sector, which require the duplication of work and skills. The limited scope of women's employment and the restricted expansion of each field are among the most important reasons for the lack of significant increase in women's employment. This may justify the vertical segregation of jobs with lower payment for women. In general, occupational gender segregation has social, economic, cultural, and historical backgrounds.

To date, three main models have been proposed to elaborate on the nature of the subject of the models in the field of women's participation. In the neoclassical model of the labor supply, the economic analysis of women's participation in the labor market is based on the studies of Mincer (1962) [57] and Becker (1965) [43]. Mincer's approach takes this human capital into account based on the assumption of maximizing the current value, while Becker's approach seeks to explain the consumption patterns of the household supply based on the functions of domestic activity production. The conclusion from these two approaches is that for a woman, the allocation of time between different decisions depends on the relative benefits and costs of those decisions.

The second model used for explaining women's economic participation is the domestic labor supply model. According to this model, the decision to participate in the labor market (especially for women) is often a decision that depends on the conditions inside the house and the place where the person lives, so it is made according to the decisions of the other family members. The total utility function for all family members is considered to be $U = U(G, L_1, L_2 \ldots, L_i)$ in which Li is the leisure i of the family members. This function is maximized due to limited household budget. This method is mostly used in labor supply studies and is derived from the method of maximizing the desirability of the individual in accordance with the household model.

In addition to the household labor supply model, the bargaining models of family members' behavior have also been proposed in this regard, based on which family members decide to work through complex bargaining with other family members. In these models, the effect of the total change in the husband's wage on the level of women's participation in the labor market is not equal. Contrary to the framework of the models based on family desirability, the level and distribution of consumption among family members may affect the work supply of each family member (Mila Elmi *et al.*, 2014) [34].

The time allocation model has been proposed as the third model by Becker (1965) [43]. He showed that the mentioned division in labor supply models is unrealistic between the labors in the market or leisure since the time that is not spent working in the market is probably not spent on leisure either, which may lead to the production of consumer goods and services at home. Becker believes that time alone is not important, but since all goods need time to be consumed, the time factor becomes important in this regard. With the stability of other conditions and increasing wage rates, the relative price of the time value in each activity increases, thereby leading to their replacement and increased working hours (Mila Elmi *et al.*, 2014) [34].

2.2 Structural Barriers Affecting the Share of Women in the Labor Force

The structural barriers that stem from social conditions and structures are divided into three categories of cultural barriers, social barriers, and economic barriers.

A) Cultural Barriers

Despite the importance of economic factors in women's employment, several studies have shown that common cultural values and beliefs within a society, such as the differences and discrimination in the socialization process of men and women and the prevalence of patriarchal thinking, directly impact employed women (Alavizadeh *et al.*, 2016) [20]. The traditions and customs within a society consider men as the breadwinners of the house. In this attitude, the economic activity of women is rendered unnecessary. Nevertheless, the increasing literacy of women, the increased average age of marriage, the reduced purchasing power of the head of the household, and the high participation rate of women are among the factors that necessitate proper planning to create suitable job opportunities for women.

B) Social Barriers

Formal laws and social rules regarding women's social and individual rights and duties affect women's participation in economic activities. Some of the social barriers in this regard include educational gender segregation, restrictive policies in the choice of the field of studies and occupation for women, family laws, labor laws, discrimination in the structure of employment and labor selection, and the gender division of male and female occupations (Alavizadeh *et al.*, 2016) [20]. If the rights of women regarding property ownership, division of inheritance, determination of spouse, decision-making in the family and choice of job, laws related to women's employment in the society, and government policies agree with the expansion of women's employment, the necessary facilities in the employment of women will be provided in different jobs (Mahmoudian, 2003) [29].

C) Economic Barriers

Regarding the economic barriers to women's participation, the following factors could be mentioned:

-*Unpaid housekeeping*: Housekeeping is the most important job of women in the society, which encompasses various economic activities. Meanwhile, no economic evaluation has been considered for such activities (Mousavi Khameneh, 2000) [33]. In other words, the costs of opportunity, staying at home, and household chores should offset the level of wages.

-*Economic inflation*: Inflation could cause women to enter economic activities and partake as the second breadwinner of the family, especially in low-income classes. Therefore, curbing inflation is considered to be an influential factor in the entry of women into the labor market (Elmi, 2004) [19].

-*Income distribution*: The unequal distribution of income is associated with the increased engagement of women in the economic activities outside the home to support the real level of household consumption.

-*Role of the government*: Decreasing governmental ownership and privatization affect women's employment. When the government controls the economy, the volume of the economy increases and prevents men from discrimination against women.

-*Unemployment rate*: A higher unemployment rate is associated with more discouragement of women in searching for jobs.

-*Wage level difference*: The difference in income between men and women is partly due to the differences in employment although women may work fewer hours than men or part-time. Another influential factor in the income gap between men and women is the discrimination in wage payments, which has been referred to as invisible adjustment by the UNICEF (Mousavi Khameneh, 2000) [33]. Furthermore, the high supply of women labor over demand causes managers and employers to hire women with lower wages, which has led to wage disparities and the subsequent reluctance of women to participate in economic activities (Farzi and Ranjbar, 2006) [21].

-*Type of occupation*: Occupations such as teaching, nursing, and office work are the conventional roles mostly assigned to women. Such jobs are often of low quality and have a low wage level, thereby causing women to practically steer clear of economic activities (Safiri, 2003) [9].

-*Socioeconomic status of the family and husband's wage*: Women are less dependent on income if the socioeconomic status of their family is favorable. The higher salary of the spouse is associated with more missed opportunities to partake in occupations. In such case, women enter initiate economic activities within the affairs of the house and their spouse (Yazdkhasti, 2007) [40].

2.3 Non-structural Barriers Affecting the Share of Women in the Labor Force

These barriers are associated with the physiological status and personality system of women and are rooted in their biological and psychological dimensions, while they are also influenced by the cultural system and social values. Women are subject to physical conditioning and mental structures in relation to work. In other words, some jobs are well done by women, while they may be excused from other jobs (Jamshidi *et al.*, 2016) [39].

2.4 Demographic Factors Affecting the Share of Women in the Labor Force

Demographic factors such as fertility rate and education level affect the participation rate of women in the labor force. Increased fertility is associated with the increased responsibilities of women at home. Therefore, increasing fertility could prevent women's activities outside the home (Hadian and Haidarpour, 1999) [38]. On the other hand, the higher education level and training of women makes them

more likely to find jobs in various sectors of the economy. Women's education has played a pivotal role in their participation level in recent years (Yazdkhasti, 2007) [40].

3 Research Background

Arib (2019) [19] identified and analyzed the barriers to the employment of educated women in Kabul, Herat, Balkh, and Kandahar provinces in Afghanistan using the logistic model, reporting that the variables of the number of people with income in the family, age, education level, inappropriate government policies, insecurity in the society, personal social factors, and public, psychological, and personal culture affect the unemployment of educated women in Afghanistan. Furthermore, the variable of personal social factors was reported to be most significant in the unemployment of educated women in Afghanistan, followed by the variables of inappropriate government policies and the number of people with income in the family, while the least significant factors were reported to be age and education level.

In another study, Heidari Sourshajani and Goshol (2015) analyzed and evaluated women's employment in urban areas using the SWOT-AHP model in Kashan, Iran. The obtained results indicated that the impact of women's employment on the urban economy (weight: 0.647) was more significant than other indicators. To determine the final score in the mentioned study, the desired indicators in terms of strengths, weaknesses, opportunities, and threats were reported to be the first priority of the opportunities that had the highest total value of the combined value.

Poorreza *et al.* (2017) investigated the effects of the formal and informal employment of women on their quality of life in Tehran, Iran. According to the findings, the mean quality of life of the women working in the formal sector was higher compared to the women working in the informal sector. On the same note, Abbasi Esfajir and Rezaei Roshan (2017) [14] assessed the influential factors in women's participation in some Middle-Eastern countries using the panel data provided during 2005-2014. The results of the mentioned study showed that the variables of women's employment to the population ratio, women's life expectancy, and women's population could positively and significantly explain the variables of female-to-male labor force participation rate in these countries, exerting a positive and significant effect on the female-to-male labor force participation rate. On the other hand, the growth of GDP per capita was reported to have a negative and significant effect on explaining the changes in the rate of women's participation compared to men in the selected countries.

In another study in this regard, Karimi *et al.* (2016) [25] examined the position of women in the labor market of Muslim and non-Muslim developing countries during 1995-2010. The obtained results indicated that the countries that have provided better conditions for women in terms of employment status are in a better position in terms of various economic indicators, and religious differences do not affect women's participation rates. Furthermore, Moshiri *et al.* (2015) [31] evaluated the influential factors in labor force participation rate in the Iranian labor market using the logistic model, reporting the highest participation rate in the middle-aged group, while married individuals participate in the labor market more frequently compared to single and previously married subjects. Therefore, it could be concluded that higher education is associated with increased participation in the labor market, especially among women. However, the income of other family members decreases the likelihood of participation in the labor market.

Mila Elmi *et al.* (2014) [34] investigated the demographic factors affecting women's economic participation in the urban areas of Iran using a panel data probe model. According to the findings, higher education (especially academic education) motivates women to enter the labor market. In addition, divorce and celibacy of women were observed to have a positive effect in this regard, while being unmarried due to the death of the spouse was reported to negatively affect the possibility of women's participation in the labor market. In another research, Rezaei (2014) [7] examined the factors hindering women's employment in Herat, Afghanistan. The results of the mentioned showed that cultural factors, traditional beliefs in the society, misinterpretation and misunderstanding of religious teachings, gender discrimination between men and women based on the superiority of men over women, discrimination between girls and boys in the process of socialization, negative family attitudes toward women's employment, women's illiteracy, and economic factors were the most significant barriers to women's employment in Herat.

Kavand *et al.* (2011) [23] used the data collected from the urban household income expenditure sampling plan in 2006 to present a picture of the participation of the female household heads in the Iranian economy based on an estimate of their role in the economic activities of urban households by estimating the logistic model of the households with a male head without a spouse and households with a female head with a spouse and without a spouse. Despite the smaller chances of women to be employed, having an academic degree by a female household head was observed to increase the chances of employment more significantly in women compared to men.

On the same note, Amini and Ghanizadeh (2010) [3] analyzed the influential factors in women's employment in Iranian industrial workshops using the data panel method. The obtained results showed that added value had the most positive effect on women's employment.

The hypothesis of replacing the female labor force with physical capital and the male labor force has been previously confirmed. Although women's real wages have a negative impact on their employment, this effect is not considered significant. In this regard, Razzaq (2008) [6] examined the employment status of women in Afghanistan, stating that the number of the women working in government offices in Afghanistan is extremely small compared to men as 75% of government employees are men, and only 25% of these positions are held by women. In addition, only 11% of women are employed in service jobs as opposed to 89% of men. According to the results of the mentioned study, lack of economic independence of women is correlated with factors such as social traditions as 58% of women consider a lack of permission from the family to be the main reason for their economic inactivity, followed by other reasons such as insecurity (26%) and housework/child care (16%).

Mehtab *et al.* (2016) [56] stated that women's participation in work plays a key role in economic development, empowerment, gender equality, and increasing social qualities. In the mentioned study, respondents believed that gender should not prevent their participation in the labor market, and men should not be allowed to take women's

place in the society. Godfrey and Emmanuel (2016) [50] also examined the determinants of the female labor force in Cameroon and its impact on economic growth using the time series method within a 37-year period (1980-2014). The results of the mentioned study showed that dependence, fertility rate, male labor force, and the annual income of each individual were the determinants of the female labor force in Cameroon.

Using the probity model and data from 1987-2004, Peters and Klasen (2011) [60] evaluated the participation of urban women aged 20-44 years in India, reporting that low education levels had a negative effect and high educations had a positive effect on women's participation rate. The low education level of the head of the household reduces their participation, while a higher education level increases women's participation. The employment of other family members and the unemployment of adult men were also observed to increase the participation rate of women, while having a young child reduced the participation rate of women. In addition, single women (especially those with higher education levels) were more likely to participate.

In this regard, Ejaz (2011) [46] claimed that the correlation between age and the female labor force participation in Pakistan is not linear as education coefficients indicated a nonlinear correlation between education and women's labor force participation. In another study, Faridi *et al.* (2009) [49] used the logistic model and random sampling to interview 164 rural and urban women and determine the influential factors in the participation of Pakistani women in Punjab region. According to the obtained results, the coefficient of all levels of education (except elementary education) had a significant effect on participation. Although the role of parents' education was considered to be insignificant in this regard, the educational status of the spouse had a significantly positive effect on the participation rate. Furthermore, married women were reported to have a higher participation rate compared to others, which was attributed to poverty, low household income, and high inflation in developing countries. Finally, the effect of the household dimension on women's labor force participation was observed to be positive.

Ntuli (2007) [58] conducted a research in South Africa during 1995-1995 to determine the influential factors in the participation rate of women aged 15-60 using the logistic model. According to the findings, education had an increasing positive effect on women's participation rate, while marriage had a declining effect, and divorce had a significant positive effect on women's labor force participation. The effects of other incomes on women's participation were also reported to be negative. In another study, Gündüz-Hosgör and Smits (2006) [52] used the data from 1998 to examine the influential factors in the participation rate of married women in Turkey, and women's education was observed to be a significant influential factor in this regard. In addition, spouse's profession was reported to affect the job position of women.

The other studies in this regard have been performed by Richard and William (2009) [61], Evans and Kelly (2008) [47], Rincon (2007) [62], Green *et al.* (2004) [51], Hafez and Ahmed (2002) [53], Arab Mazar *et al.* (2014) [17], Madani and Nejad Fallah (2014) [32], Karimi Moghari *et al.* (2013) [24], Nahvi and Ghorbani (2012) [35], Sadeghi and Emadzadeh (2004) [13], (2003) [30], and Afshari and Sheibani (2003) [2].

4 Materials and Methods

4.1 Logistic Pattern

In the logistic model, the selected behaviour of individuals is subject to two options, only one of which must be selected. In the present study, women's employment in Herat was considered the dependent variable (Y), which was a qualitative variable with two values of zero and one. In other words, if the person was employed, the value of the dependent variable would be equal to one; otherwise, it would be zero. In such case, variance heterogeneity and UI abnormalities were prevented by a pattern that had the following characteristics:

lim prob (Y=1)=1 (1)

$$\acute{\beta}_X \to +\infty$$

lim prob (Y=0)=0 (2)

$$\acute{\beta}_X \to -\infty$$

Its cumulative distribution function was as follows:

$$p_i = 1 - F(\acute{\beta}X_i) = \frac{\exp(\acute{\beta}X_i)}{1+\exp(\acute{\beta}X_i)} = \frac{1}{1+e^{-z}} = \wedge(.) \quad (3)$$

$$-p_i = 1 - F(-\acute{\beta}X_i) = \frac{\exp(-\acute{\beta}X_i)}{1+\exp(-\acute{\beta}X_i)} = \frac{1}{1+e^{+z}} = \wedge(.) \quad (4)$$

If the *Z* variable changes between ∞- and ∞ +, the values of *Pi* will change between zero and one. In such case, *Pi* would be nonlinear not only in terms of *Xi*, but also *β*. In other words, the OLS method could no longer be used to estimate the parameters of this model. To solve this problem, *Pi* could be converted into a linear relation based on the following parameters:

$$\frac{p_i}{1-p_i} = \frac{1+e^{z}}{1+e^{-z}} = e^{z} \quad (5)$$

$\frac{p_i}{1-p_i}$ Is the ratio of the probability of women's employment in Herat city to the non-employment of women in Herat city? If we consider the natural logarithm in Equation 5, the following result will be obtained:

$$L_i = L_n\left(\frac{p_i}{1-p_i}\right) = Z_i \quad (6)$$

As can be seen, *L* (logarithm of superiority ratio) is linear not only in terms of *Xi*, but also the parameters. These patterns no longer face the problems mentioned earlier (Gujarati, 1999) [27]. One of the most important goals in estimating possible patterns such as logistics is to predict the effects of the changes in explanatory variables on the dependent variable, which is known as the final effect (ME) with the following formula:

$$\text{ME}=\frac{\partial P_i}{\partial X_{ik}} = \frac{\exp(\acute{\beta}X_i)}{[1+\exp(\acute{\beta}X_i)]^2}\beta_k \quad (7)$$

The elasticity of the explanatory variable is also obtained by the following equation:

$$\mathcal{E}_k = \left[\frac{\exp(\hat{\beta}X_i)}{\left[1+\exp(\hat{\beta}X_i)\right]^2}\beta_k\right]\frac{X_{ik}}{P_i} = \beta_k(1-P_i)X_{ik} \quad (8)$$

In the logistic model, the estimated coefficients (β) do not have a direct economic interpretation, and the ME coefficients and elasticities are interpreted. Stretches could only be used for continuous independent variables. According to Most (1986), since tensions are the nonlinear functions of observational values, there is no guarantee that the logistic function will pass the point defined by the sample mean. To solve this problem, offered another method. In the proposed method, the tensions for each observation are initially calculated, and a weighted mean is obtained from the tensions, and the weights are the predicted probabilities. The mean stretch of Equation 3-9 is as follows:

$$E_k = \left(\frac{\partial P_i}{\partial \bar{X}_k}\right)\frac{\bar{X}_k}{F(\hat{\beta}\bar{X}_i} \quad (9)$$

Weight traction is also obtained from the following equation:

$$\bar{E}_k = \frac{\sum_{i=1}^{N}\hat{P}_i E_{ki}}{\sum_{i=1}^{N}\hat{P}_i} \quad (10)$$

In the logistic model, instead of the coefficient of determination (R^2), other coefficients of interpretation are interpreted, such as Cragg-Uhler and McFadden, the relations of which are described below (Gujarati, 1999) [27].

Crack Ohler determination coefficient

$$R^2 = \frac{1-exp\{2[L(0)-L(\hat{\beta})]/N\}}{1-exp\{2L(0)/N\}} \quad (11)$$

McFadden determination coefficient

$$R^2 = 1-[L(\hat{\beta})/L(0)] \quad (12)$$

Chaw determination coefficient

$$R^2 = 1-\frac{\sum_{t=1}^{N}(Y_t-\hat{Y}_t)^2}{\sum_{t=1}^{N}(Y_t-\bar{Y})^2} \quad (13)$$

In the logistic model, the LR test statistic is used to measure the total significance of the model and the good fit using the following equations:

$$LR = 2[L(\beta)-L(0)]$$
$$L(\beta) = \sum_{n}^{N}\{Y_t \ln[F(\beta' X_t)]+(1-Y_t)\ln[1-F(\beta' X_t)]\}$$
$$L(0) = S\ln\left(\frac{S}{N}\right)+(N-S)\ln\left(\frac{N-S}{N}\right) \quad (14)$$

The sample population of the present study were all women (educated and uneducated) in 2020. They were divided into two groups of the employed and unemployed residents of Herat. Due to the characteristics of the sample population (scattered and widespread), accurate statistics we're not available on the status of the women (educated and uneducated) to determine the sample size, and the sample volume was unknown. Meanwhile, Morgan's table was used, and the sample size was estimated at 384 using the following formula below:

$$n = \frac{\frac{z^2pq}{d^2}}{1+\frac{1}{N}\left[\frac{z^2pq}{d^2}-1\right]} = \frac{\frac{(1.96\times1.96)\times(0.5\times0.5)}{(0.05\times0.05)}}{1+\frac{1}{\infty}\left[\frac{(1.96\times1.96)\times(0.5\times0.5)}{(0.05\times0.05)}-1\right]} = 384$$

In the formula above, *p* and *q* are the success and failure ratios, respectively (=0.5). The value of *zα/2* at the error level was also estimated at 0.05, which is equal to 1.96. The value of error (d) was also equal to 0.05, and the value of *N* represents the size of the target community. Considering the size of the indefinite (infinite) population, the denominator expression was equal to one, and the sample size was obtained by dividing the form by one and calculated to be 384. Simple random sampling was the method of choice in our study. Since the objective of the research was to measure views and attitudes, the related spectra were used based on a five-point Likert scale, and the options included strongly agree (score 5), agree (score 4), no opinion (score 3), disagree (score 2), and strongly disagree (score 1). To formulate the questions, we reviewed theoretical foundations, research proposals, and the opinions of the experts in this field to prepare a preliminary questionnaire. Following that, the initial questionnaire was implemented as a pilot study, and any problems terms of content and concept were resolved through consultation in order to develop the final questionnaire. To assess the validity of the questionnaire, the face validity method was used by a panel of experts (supervisors and consultants), and their opinions were applied and finalized. In addition, the internal synchronization method was used to measure the reliability of the questionnaire based on the Cronbach's alpha coefficient.

5. Results and Discussion

Table 1 shows the reliability of the research instrument based on Cronbach's alpha. Accordingly, all the variables are within the acceptable range, and the reliability of the research tool was confirmed.

Table 1: Reliability of Research Tool

Variables		Number of Questions	Cronbach's alpha Coefficients
Economic	Environmental	5	0.70
	Personal	2	0.60
Social	Environmental	3	0.723
	Personal	3	0.683
Cultural	Environmental	4	0.670
	Personal	3	0.587

Psychological and Individual	-	3	0.810
Total	-	33	0.835

***Source*:** research findings

Table 2 shows the results of the estimations of the logistic model used to determine the influential factors in women's participation rate in the labor market of Herat city. Accordingly, seven of the independent variables in the proposed model were significant, including marital status, number of children, number of people with income in the family, age, education level, and monthly expenses. However, the other variables were considered non-significant, including environmental economic factors, personal economic factors, personal social factors, environmental cultural factors, personal cultural factors, psychological and individual factors; nevertheless, they affected women's participation in the labor market in Herat to some extent (formula 1).

Marital status was the first variable that was considered significant in the present study. In other words, single women were more likely to participate in the labor market compared to married women since they were less busy. The next variable affecting the women's participation rate was the number of children. As the number of children in the family increased, the likelihood of women's participation in the labor market was observed to increase due to their non-participation since families with more children have a higher cost of living, which makes women more willing to participate in the labor market.

According to the current research, the number of people with income in the family significantly affected the participation rate of women. In other words, the larger number of people with income in the family was associated with the higher possibility of women's participation in the labor market of Herat city since they could provide the conditions for the employment of the other family members with their relationships in the workplace. The age variable also had a significant effect in this regard as increased age was associated with the higher probability of women's participation in the labor market in Herat city since the education of such individuals often increases, thereby providing better conditions for women's employment.

Education was considered a statistically significant factor in the present study. As education increases, the likelihood of women participating in the labor market increases. In other words, women with higher education will be provided with better job opportunities due to the growing employment situation in Afghanistan, which is in dire need of using the country's educated workforce. Monthly cost was another influential factor in this regard, which had a negative and significant impact on women's participation in the labor market in Herat. Since people do not often declare their monthly income and that of their families, we studied the cost variable instead.

According to our findings, increased family expenses (increased family income) decreased women's desire to participate in the labor market due to the adequacy of family income. The final significant variable was environmental social factors. The higher risk of death and social insecurity in Herat was associated with the more negative attitudes in Herat toward the presence of women in the labor market, as well as the opposition of families to women's employment and working outside the home in Herat. Formula 1 shows the mentioned factors in the form of a regression formula.

$$Y= -9.1047 -0.5979X1 +0.2996X2+ 0.2931X3 + 0.0318X4 + 0.5832X5 – 0.00002X7 – 0.4546X10 \text{ (Formula 1)}$$

Table 2: Estimation Results of Logistic Model of Influential Factors in Women's Participation in Labor Market of Herat City

Variable	Coefficient	Standard Error	Z Statistic	Probability
Marital status (X1)	-0.5979	0.3349	-1.79	0.074*
Number of children (X2)	0.2996	0.1227	2.44	0.015**
Number of people with income in family (X3)	0.2931	0.1407	2.08	0.037**
Age (X4)	0.0318	0.0163	1.95	0.051*
Academic education (X5)	0.8135	0.6012	1.35	0.176^{NS}
Education rate (X6)	0.5832	0.1335	4.37	0.000***
Monthly income (X7)	-0.00002	0.000000073	-2.92	0.004***
Environmental economic factors (X8)	0.2213	0.2041	1.08	0.278^{NS}
Personal economic factors (X9)	0.0666	0.2015	0.33	0.741^{NS}
Environmental social factors (X10)	-0.4546	0.2153	-2.11	0.035**
Personal social factors (X11)	-0.2741	0.1903	-1.44	0.150^{NS}
Environmental cultural factors (X12)	-0.2774	0.2267	-1.22	0.221^{NS}
Personal cultural factors (X13)	0.3076	0.2231	1.38	0.168^{NS}
Psychological and individual factors (X14)	0.0754	0.1299	0.58	0.561^{NS}
Fixed value (C)	-9.1047	2.1535	-4.23	0.000***

***Source*:** research findings *, **, and ***: significance at 90%, 95%, and 99%, respectively; NS: lack of significance

To examine the effect of changing the probability of women's participation in the labor market of Herat city due to the change of independent variables by one unit, it is critical to calculate their final effect. In the present study, we also calculated elasticities, which indicated the relative importance of the explanatory variables in the participation or non-participation of women in the labor market of Herat city. Of the two calculated tensions, the mean tensile strength and the total weight given, the total weight given was considered most reliable. Table 3 shows the total weight tensions and the final effect of the pattern variables. The total weight stretch given for the marital status variable was estimated to be -0.1953. With the assumption that the other factors would remain constant, every one-percent increase in this variable would decrease the probability of the participation of women in the labor market of Herat city by 0.1953%. The final effect of this variable was estimated at -0.1456, indicating that one unit of increase in this variable would decrease the probability of the participation of women in the labor market of Herat city by 0.1456 units.

The total weight of the variable of the number of children was 0.3096, suggesting that a one-percent increase in the number of children would increase the probability of women's participation in the labor market in Herat by 0.3096%. The final effect of this variable was estimated to be 0.0729, which showed that one unit of change in this variable would increase the probability of women's participation in the labor market of Herat by 0.0729 unit. The number of people with income in the family was the next variable evaluated in the current research. The total weight tension of this variable was estimated to be 0.2889, suggesting that a one-percent increase in this variable would increase the probability of women's participation in the labor market of Herat city by 0.2889%. Furthermore, the final effect of this variable was calculated to be 0.0713. On the other hand, the total weight elasticity of the age variable was estimated at 0.6282, indicating that a one-percent increase in the age variable would increase the probability of women's participation in the labor market of Herat by 0.6282% assuming that other conditions would remain constant. The final effect of this variable was calculated to be 0.0077, suggesting that one unit of change in the age variable would change the probability of women's participation in the labor market of Herat city by 0.0077 units. The total weighted elasticity of the variables of having academic education, education level, and monthly expenses was estimated at 0.2973, 4.9463, and -0.3006, respectively, indicating that a one-percent increase in these variables would change the probability of women's participation in the labor market of Herat city to 0.2973, 4.9463, and 0.3006, respectively. Moreover, the final effect of these variables was equal to -1.81, 0.1420, and -0.0000005, respectively. The total weight of the variables of economic (environmental/personal), social (environmental/personal), cultural (environmental/personal), psychological, and individual factors was equal to 0.5212, 0.1529, -0.0143, -0.161, 0-6278, 0.7186, and 0.1284, respectively. In addition, the final effect of these variables indicated that one unit of change in these variables would change the probability of women's participation in the labor market of Herat to 0.038, 0.062, -0107, -0.067, 0.6750-, 0.7490, and 0.1830, respectively.

According to the information in Table 3, comparison of the elasticities of seven variables affecting women's participation in the labor market of Herat city in the logistic model demonstrated that the variable of education had the most significant effect on women's participation in the labor market of Herat city, followed by the variables of environmental social factors and age, while the least significant variables were marital status and the number of people with income in the family.

Table 3: Total Weight and Final Effect of Influential Factors in Women's Participation in Labor Market of Herat City

Variable	Total Weight Traction	Final Effect
Marital status (X1)	-0.1953	-0.1456
Number of children (X2)	0.3096	0.0729
Number of people with income in family (X3)	0.2889	0.0713
Age (X4)	0.6282	0.0077
Having a university education (X5)	0.2973	0.1981
Education rate (X6)	4.9463	0.1420
Monthly fee (X7)	-0.3006	-0.000005
Environmental economic factors (X8)	0.5212	0.0538
Personal economic factors (X9)	0.0444	0.0162
Environmental social factors (X10)	-1.0743	-0.1107
Personal social factors (X11)	-0.6161	-0.0667
Environmental cultural factors (X12)	-0.6271	-0.0675
Personal cultural factors (X13)	0.7186	0.0749
Psychological and individual factors (X14)	0.1284	0.0183

***Source*:** research findings

In the logistic model, the LR test was used to measure the significance of the entire pattern and the goodness of fit. Considering the value of this statistic (130/306) and its significance level (0.000), the null hypothesis that the value of the coefficients of all the studied variables is zero was strongly rejected. Therefore, it could be concluded that at least one of the explanatory variables had a significant effect on the probability of the unemployment of educated women in Herat. The values of McFadden and Cragg-Uhler detection coefficients for the fulfilled pattern were estimated at 0.247 and 0.385, respectively. These coefficients of determination show that the significant independent variables of the model could justify a few percentages of the changes in the dependent variable (i.e., possibility of barriers affecting the employment of educated women in Herat city). In addition, the predictive percentage of the estimated logistic model was estimated to be 73.44, which is desirable and indicates the predictive accuracy of the proposed model. This is because the closeness of this criterion to number one would indicate the better fit of the pattern.

Table 4: Good Fitting Statistics for Estimated Logistic Pattern

Percentage of accurate predictions=73.44	LR=130.306 (0.000)
McFadden R^2=0.247	Cragg-Uhler R^2=0.385

***Source*:** research findings

6. Conclusion and Research Implications

This study aimed to investigate the influential factors in women's participation in the labor market of Herat. Initially, we reviewed the previous studies in this regard and evaluated the theoretical foundations. Accordingly, the main influential factors in women's participation in the labor market included individual factors (marital status, number of children, number of people with income in the family, age, academic education, type of academic education, monthly expenses), economic factors (environmental

/personal), social factors (environmental/personal), cultural factors (environmental/personal), and psychological factors.

According to our findings, marital status was the first factor to have a negative and significant effect on the probability of women's participation in the labor market of Herat city. In other words, single women were more likely to partake in the labor market compared to married or divorced women, which is consistent with the findings of Peters and Klassen (2011) [60], Lee *et al.* (2008) [55], Ntuli (2007) [58], and Mila Elmi *et al.* (2014) [34]. Moreover, the number of children had a positive and significant effect on the probability of women's participation in the labor market of Herat city. In other words, families with more children were more likely to participate in the labor market due to increased living costs, which is in line with the studies by Peters and Klassen (2011) [60], Sarani *et al.* (2014) [8], and Farmer Haddad and Bagheri Ghanbarabadi (2011) [26].

According to the obtained results, the number of people with income in the family also had a positive and significant effect on the probability of women's participation in the labor market of Herat city. In other words, people with income in the family may encourage other family members to participate in the labor market, which increases the women's likelihood of participation. This is also in congruence with the findings of Peters and Klassen (2011) [60], Netoli (2007) [58], and Arab Mazar *et al.* (2014) [17]. Age was observed to be another variable with a positive and significant effect on the probability of women's participation in the labor market of Herat city. With age, people's education usually increases, thereby providing better conditions for women's employment. Our findings in this regard are consistent with the results obtained by Ajaz (2011) [46], Hyung (2003) [54], Hafez and Ahmad (2002) [53], Moshiri *et al.* (2015) [31], Sarani *et al.* (2014) [8], Arab Mazar *et al.* (2014) [17], Keshavarz Haddad and Bagheri Ghanbarabadi (2011) [26], and Harandi and Jamshidi (2008) [39]. Our findings demonstrated that education level had a positive and significant effect on the probability of women's participation in the labor market of Herat city. Given the developing state of Afghanistan, women with higher education levels are provided with better job opportunities. This is in line with the studies conducted by Peters and Klassen (2011) [60], Ajaz (2011) [46], Netoli (2007) [58], Evans and Kelly (2008) [47], Rincon (2007) [62], Hafez and Ahmad (2002) [53], Arib (2019) [1], Moshiri *et al.* (2015) [31], Sarani *et al.* (2014) [8], Mila Elmi *et al.* (2014) [34], Farmer Haddad and Bagheri Ghanbarabadi (2011) [26], Nahvi and Ghorbani (2012) [35], Harandi and Jamshidi (2008) [39]. Monthly costs and environmental social factors were the next two variables with negative and significant effects on the probability of women's participation in the labor market of Herat city. The results obtained by Godfrey and Emmanuel (2016) [50] also indicated that monthly expenses (income) had a negative impact on participation in the labor market.

In conclusion, the following implications could help researchers in similar studies:

- Women with higher education are more likely to participate in the labor market. Therefore, providing the proper conditions for the education of all women could enhance their participation in the labor market. Some of these measures include the construction of universities and higher education institutions, increasing the quality of education, and modernization and improvement of the existing higher education institutions.
- Environmental social variables (i.e., life risks and social insecurity in Herat city, negative attitudes toward the presence of women in the labor market, families' opposition to women's employment and working outside the home) had negative and significant effects on women's participation in the labor market. Therefore, it is suggested that by establishing security in the city and changing the negative attitudes toward the presence of women in the labor market, proper conditions be provided to women to enter the labor market without concern.
- The government of Afghanistan should take appropriate measures to create the conditions and encourage the entry of women into the labor market.
- Given the low security in Afghanistan and the direct impact of this factor on employment, it is suggested that by increasing security budgets and taking the necessary measures in this regard, proper conditions be provided for the employment of educated women in Afghanistan.
- Despite the contributions of international organizations to the growth and development of Afghanistan on all levels, the high level of corruption in this country still deters the people Afghanistan, and the issue should be managed effectively through the allocation of adequate financial resources by the government.
- Facilitating domestic and foreign investment in appropriate training and supervision in this area could significantly improve the employment conditions of women in Afghanistan.

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