# Migrant Female Entrepreneurship:
# Driving Forces, Motivation and Performance

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**Abstract**

The present paper investigates migrant female entrepreneurship on the basis of driving forces, motivation and performance of migrant women entrepreneurs. We review the factors that push migrant females towards entrepreneurship and that determine their entrepreneurial performance. In order to understand and test the determinant factors behind the motivation towards entrepreneurship as well as the economic and survival performance of migrant women entrepreneurs, this paper addresses in the empirical part Turkish female entrepreneurs in Amsterdam. The data and information used for evaluation are based on in-depth personal interviews. As a rather novel methodological contribution, a recently developed artificial intelligence method, i.e. rough set analysis, is deployed to assess and identify the most important factors in motivation and performance of migrant females.

# 1. Scoping the Scene

The main feature of economic restructuring in the last decades has been a marked shift from employment in large firms to self-employment in small firms. This trend has been most pronounced among members of two different groups: immigrants and women. The increasing rate of business ownership among both immigrant groups and women has become one of the driving forces of the growth of national economies, in particular, in the US and in many countries in Europe (Barrett et al., 1996; Borjas, 1986 and 1990; Center for Women's Business Research, 2004 and 2005; Cross, 1992; GEM, 2004; Gorter et al., 1998; Kloosterman et al., 1998; OECD 2001a, 2001b and 2006; Weeks 2001; Pearce, 2005). Actually, both ethnic and female participation in terms of self-employment and entrepreneurship are seen as powerful economic forces and contributors to a solution to structural labor market problems in many industrialized countries.

When we look at the position of women, some available data clearly shows the increasing trend in female self-employment over the years. In the 1990s between one-quarter and one-third of the formal sector businesses were owned and operated by women (in the U.S. 38% (1999), in Finland 34% (1990), in Australia (1994) and Canada (1996) 33%, in Korea 32% (1998) and in Mexico 30% (1997) (Weeks, 2001)), while in the 2000s the female share in total entrepreneurial activity has approached almost 50% in many countries. According to Verheul et al. (2004) who explain female and male entrepreneurship across 29 GEM (Global Entrepreneurship Monitor) countries, the share of women in total entrepreneurial activity is over 40% in many countries. On the basis of 2002 data, the female share in entrepreneurship is 44.3% in South Africa, 41.5% in Mexico, 41.2% in Brazil, 40.8% in Poland and Argentina, 39.4% in India, 38.8% in the US, 38.7% in Finland and 38.3% in the Netherlands.

The recently published report titled 'Top Facts About Women-Owned Businesses' by the Center for Women's Business Research (2005), claims that nearly half (48%) of all privately-held US firms are women-owned meaning that one out of 11 adult women is an entrepreneur in the US. The report states that the estimated growth rate in the number of women-owned firms is nearly twice that of all firms (17% vs. 9%). These firms employ 19.1 million people meaning that one out of 7 employees in the US works in a woman-owned business. Besides the employment of 19.1 million people, these firms generate nearly $2.5 trillion value in sales and make thus an important contribution to the US economy.

However, research also shows that women have substantially lower levels of self-employment than men. Although female self-employment rates have risen drastically in recent decades, the prevalence of business ownership among women is only 50-60 percent of that for men. Self-employment is male dominated in most countries and several countries have female self-employment rates that are roughly one third of male rates (Fairlie, 2005; Lohmann, 2001; OECD, 2001b). The analysis of the dynamics of self-employment by gender, race and education by Fairlie (2005) shows that women are substantially less likely to be self-employed than men and have lower rates of entry into self-employment and higher exit rates from self-employment than men. The probability of self-employment increases with an individual being older, married, widowed, divorced, separated, having more children, or having a disability (Fairlie and Meyer, 1996; Lohmann, 2001). Therefore, the motives to choose self-employment are also different for men and women. While self-employment is a successful employment option for men, self-employment for women is a way to combine business and domestic responsibilities. Overall, compared to other types of employment, self-employment offers women the desirable and valuable element of time and space flexibility to combine family with work, while different institutional settings create differing opportunities, leading to different outcomes for self-employment (Baycan-Levent et al., 2006; Brush, 1992;

CEEDR, 2000; Constant, 2004; Fischer et al., 1993; Koreen, 2001; Letowski, 2001; Lohmann,, 2001; Nielsen, 2001; OECD, 1998 and 2001a; Weeks, 2001). While being married increases the probability of working in flexible types of employment, married women are likely to have higher occupational prestige and wage rates, since an alternative source of income (the husband's) is generally available and the value of the married woman's time in the home may be higher. Therefore, a married woman is less likely to take a job, if she cannot earn high wages or attain a reasonably high level of occupational prestige (Kossoudji and Ranney, 1984). Another explanation for the choice towards self-employment is given by Constant (2004) on the basis of some critical factors such as age, education, parenthood and self-employed parents. According to the findings of Constant's research, women choose self-employment over a business career in the salaried sector when they are older, less educated, have under-age children and parents who are self-employed themselves. When women are younger and more educated but have children, they choose self-employment as a way to circumvent unemployment. Women who are more educated and do not have under-age children are more likely to be business-women in the paid sector, suggesting a clear choice for a secure job. The results of the study show also that while business-women in paid-employment earn the highest wages, women with self-employment earn more than women in lower dependent employment categories.

When we look at the immigrant groups, according to the 'International Migration Outlook' published by OECD (2006), immigrants account for a large proportion of the total labor force in the OECD countries. The numbers have increased by over 10% over the past five years (1999-2004) in almost all OECD countries. While the increase is especially large in Southern European countries -for instance, 6 times in Italy and 3.5 times in Spain-, the increase reached levels of 46% in Ireland, 42% in Sweden and 30% in the US. In 2004, foreign-born labor force accounted for 45% of total labor force in Luxembourg, 25% in Switzerland, 13% in Sweden, 12% in Germany and 11% in Belgium, France, the Netherlands and Spain. The report states that immigrants have contributed to job creations in many countries. Immigrants contributed to and benefited from over 30% of net job creation in the UK, whereas the percentage was 20% in Spain, the Netherlands, Portugal, Italy and Sweden. Self-employment among immigrants has also increased in almost all countries over the past five years in both numbers and as a percentage of overall self-employment. The share of foreign-born in total self-employment accounted for 38.7% in Luxembourg, 17.5% in Switzerland, nearly 14% in Sweden, and 12% in Belgium in 2004.

According to another report, 'Global Entrepreneurship Monitor United Kingdom' (GEM, 2004), UK ethnic minorities lead on entrepreneurship. The report states that the UK forms Europe's most entrepreneurial economy and that people from ethnic minorities make a large and important contribution to the success of the UK economy.

The increasing number of self-employed migrants and the results of many studies show that the tendency or ability to become self-employed differs between native people and immigrants (Borjas, 1986; Fairlie and Meyer, 1996; Verheul et al, 2001). In general, immigrants are more likely to be self-employed than similarly skilled native-born workers, while self-employment rates of immigrants exceed in many countries those of native-born. While assimilation has a positive impact on self-employment probabilities (Borjas, 1986), the level of education and time since immigration are important determinants of self-employment (Fairlie and Meyer, 1996).

The literature on migrant entrepreneurship explains the driving forces and motivations (see, e.g., Bull and Winter, 1991; Danson, 1995; Davidsson, 1995) to become self-employed by *structural* factors (such as social exclusion and discrimination, poor access to markets and high unemployment) and *cultural* factors (such as specific values, skills and cultural features including internal solidarity and loyalty, flexibility, personal motivation, strong work ethics,

informal network contacts with people from the same ethnic group, and flexible financing arrangements etc.) or a blend of these factors (included in the so-called *interaction* model formulated by Waldinger et al. (1990)). In general, the motives for migrant entrepreneurship are to be found largely in the challenges imposed by their less favored position (social exclusion, discrimination, lack of education and skills, high levels of unemployment etc.). The existence of ethnic and social networks plays also a major role in motivating immigrants towards entrepreneurship (van Delft et al., 2000; Johnson, 2000; Kloosterman et al., 1998; Masurel et al., 2002; Ram, 1994a-b; Wilson and Portes, 1980). Such networks provide on the one hand, rotating credits, a protected market and a proper labor force (Basu, 1998; Deakins et al., 1997; Deakins, 1999; Kloosterman et al., 1998; Lee et al., 1997; Rettab, 2001), while on the other hand it creates a more than average loyalty between the ethnic firm and his clients (Donthu and Cherian, 1994; Dyer and Ross, 2000). Although there are some similar motives and driving forces among different migrant groups, self-employment rates differ enormously by migrant groups, a situation that can be explained by cultural factors.

In parallel to the increasing trend in self-employment among immigrants and women, a new trend, viz. an increasing business ownership by migrant females, has emerged in the past years. Although the available data is limited, this new information is quite interesting to highlight some facts in migrant female entrepreneurship.

According to the report published by the Center for Women's Business Research (2004), as of 2004 there are an estimated 1.4 million privately-held firms majority-owned (51% or more) by women of color (include African Americans, Asian American/Pacific Islanders, Hispanics, and Native American/Alaska Natives) in the US., employing nearly 1.3 million people and generating nearly $147 billion in sales. Firms owned by women of color now represent 21.4% of all privately-held, women-owned firms in the US –meaning that one out of five women-owned firms is owned by a women of color. The number of firms owned by women of color is estimated to have increased six times faster than the number of all US firms (55% vs. 9%); employment by 62%; and sales by 74% between 1997 and 2004. The report also states that women of color own 35.6% of all firms owned by persons of color. Women of color also employ 20.1% of the workers and generate 16.3% of the sales of all firms owned by persons of color.

According to another study which examines the rise of immigrant women entrepreneurs in the United States (Pearce, 2005), today immigrant women comprise one of the fastest growing groups of business owners. The study states that the number of immigrant women annex business owners has increased nearly 190 percent since 1990 and 468 percent since 1980 and that, while immigrant women's entrepreneurship has increased by 468 percent in twenty years, the number of entrepreneurial ventures among immigrant men has increased by 300 percent during the same period. It seems that although immigrant men continue to have the highest rates of business ownership, the ownership among immigrant women is moving closer to that of their male counterparts. On the other hand, the results of the study show also that, although they represent a small portion of women's business ownership overall, immigrant women are more likely than non-immigrant women to own their own businesses. In 2000, 8.3 percent of employed immigrant women were business owners, compared to 6.2 percent of employed native-born women in the US. The Global Entrepreneurship Monitor United Kingdom Report (GEM, 2004) observes the same trend for the UK. According to the report, women from ethnic minorities are substantially more entrepreneurial than their white female counterparts. While female Total Entrepreneurial Activity (TEA) is 3.6% amongst white people, it is two and a half times higher amongst women from mixed backgrounds (10.2%), Bangladeshis (10.9%), Other Asians (10.3%) and Black Caribbeans (10.5%). According to the report, the most entrepreneurial group is that of 'Other Black' at some

29.2% of all women (GEM, 2004). These figures clearly show that migrant females have become more entrepreneurial than their migrant-male and native-female counterparts.

This new emerging trend at the intersection of migrant and female entrepreneurship, so-called 'migrant female entrepreneurship', has drawn the attention of several researchers to migrant females with a more specific focus than migrant males (Baycan-Levent et al. 2003 and 2006; Center for Women's Business Research, 2004; Constant, 2004; Dallalfar, 1994; Gilbertson, 1995; Hillmann, 1999; Pearce, 2005; Schoeni, 1998; Wright and Ellis, 2000). These studies highlight very interesting trends in migrant female entrepreneurship and explain some prominent characteristics of migrant females in the labor market. However, much research is needed to better understand the driving forces, motivations and success conditions or performance of migrant female entrepreneurs.

Against this background, the present study investigates and analyses migrant female entrepreneurship on the basis of driving forces, motivation and performance of migrant female entrepreneurs. Which factors push migrant females towards entrepreneurship and determine their entrepreneurial performance? In order to understand the determinant factors behind the motivation towards entrepreneurship as well as economic and survival performance of migrant female entrepreneurs this paper addresses Turkish female entrepreneurs in Amsterdam.

The study is organized as follows. In section 2 an overview on migrant female entrepreneurship is given and migrant female entrepreneurship is described on the basis of a comparison of migrant and female entrepreneurship. Section 3 contains a description of our case study and our data material from in-depth interviews. Various empirical results are given to describe the general profile of Turkish female entrepreneurs and enterprises. Section 4 then offers an explanatory framework of the characteristics for migrant female entrepreneurs and enterprises, by using a recently developed artificial intelligence method, viz. rough set analysis. Section 5 concludes with a summary discussion on migrant female entrepreneurship.

## 2. Migrant Female Entrepreneurship: An Overview

Although much research effort has been put into the study of migrant entrepreneurship and female entrepreneurship, there is little comprehensive or solid research on migrant female entrepreneurship, while studies of the gender dimensions of ethnic employment niches remain generally case based. In general, less attention has been paid to the vital role of gender resources in ethnic economies; the focus has been on the status of women as either unpaid or underpaid family members. Women's involvement in ethnic economies is often regarded as an extension of their domestic, maternal, or socially reproductive activities in the household. Having access to cheap or unpaid family labor and, in many cases, married women's labor has been a critical factor in determining the economic success of the small business to accumulate capital.

The reasons for this lack of attention to gender dimensions of ethnic employment depend, on the one hand, on the belief that the number of female labor migrants is relatively small and that any potential impact they might have is insignificant and on the other hand, on the assumption that women primarily follow men in migration and when they work they find jobs working alongside their husbands filling the same labor market functions (Kossoudji and Ranney, 1984). However, many studies suggest clearly that women are not simply following men in migration and that their labor market functions are quite distinct from men's (Dallalfar, 1994; Kossoudji and Ranney, 1984; Wright and Ellis, 2000). Women migration patterns may be distinct from men in both the timing and the directionality of the flow. Gendered obligations often make it more difficult for women to migrate than men or require

that they move for reasons other than employment. Dallalfar (1994) and Wright and Ellis (2000) emphasized that women and men have differential access to both ethnic and gender resources within the immigrant community and that they tend to access different networks for finding work or obtain differential information from networks because of gender characteristics of jobs. They explained this fact by the gendered social capital in immigrant communities as well as different migration information systems of women compared to men.

The lack of attention to gender dimensions of the ethnic economy has prompted in the last years an increasing interest among researchers in addressing women as entrepreneurs in the ethnic economy in parallel to the increasing number as well as the higher shares of migrant females in business ownership compared to migrant male and native counterparts (Baycan-Levent et al. 2003 and 2006; Center for Women's Business Research, 2004; Constant, 2004; Dallalfar, 1994; Gilbertson, 1995; Hillmann, 1999; Pearce, 2005; Schoeni, 1998; Wright and Ellis, 2000). In general, these investigations describe migrant or ethnic female entrepreneurship on the basis of two dichotomies: male-female (gender) and ethnic-native (ethnic).

"Are ethnic female entrepreneurs special ethnic entrepreneurs or special female entrepreneurs?" On the basis of this research question Baycan-Levent et al. (2003) described the dual character of ethnic female entrepreneurs and the characteristic indicators of ethnic female entrepreneurship that are critical in the two-sided effects of ethnic and female entrepreneurship. For this identification they compared the characteristics, advantages/opportunities and problems/barriers of these two groups. This comparison shows that there are many similarities between these two groups in terms of characteristics and opportunities, specific barriers and problems, but also clear differences in terms of ethnic or gender based obstacles, needs and networks (Figure 1). However, the results of their study show that ethnic female entrepreneurs are not special ethnic entrepreneurs, but that they are special female entrepreneurs particularly in terms of their personal and business characteristics, and their driving forces and motivations.

The findings of many studies show that gender has become more important than race in determining occupation (Albelda, 1986; Baycan-Levent et al., 2003 and 2006; Dallalfar, 1994; Wright and Ellis, 2000). Ethnicity matters less than gender in the labor market. According to the study of Baycan-Levent et al. (2006), 'gender' as a factor has a higher importance than 'ethnicity' in the characteristics and behavioral attitudes of migrant entrepreneurs, while gender-based differences in migrant entrepreneurship are similar to gender-based differences observed commonly in entrepreneurship. It seems that the changes in the economy over time have led to occupational convergence by gender. Gender is a definitive factor in determining immigrant entrepreneurial activity, as well as types of ethnic resources that immigrants use to form and maintain their small businesses (Dallalfar, 1994). Immigrant women are more likely to funnel into occupations where other immigrant women work, regardless of nativity, than into jobs beside co-ethnic men (Wright and Ellis, 2000). As generally observed in female entrepreneurship, being married, widowed, divorced or separated increases also the probability of self-employment for migrant females. For example, the study of Dallalfar (1994) on Iranian women entrepreneurs in the US shows that many Iranian immigrant women who are divorced, separated, widowed, and never married, or immigrant women who are married and whose husbands are underemployed or unemployed are sole owners of small businesses in the ethnic economy.

The literature on the structure of female work in ethnic economies highlights certain frequently found characteristics. Gender focused research shows that the enclave economy does not necessarily support the professional advancement of women as much as it does for

**ETHNIC ENTREPRENEURSHIP**

**FEMALE ENTREPRENEURSHIP**

**OPPORTUNITIES**

*Motivation and driving forces:*
generating extra income
existence of a socio-cultural network
cultural attitudes in shaping an entrepreneurial spirit

*Motivation and driving forces:*
generating extra income
to be independent and own boss
existence of an entrepreneurial family tradition

**RESOURCES
DEMAND/ INFORMATION**

*Market opportunities:*
existence of a special ethnic market
potential competitive advantages that are offered by ethnic community
ethnic loyalty between ethnic enterprises and their clients

*Market opportunities:*
existence of culturally special female market
demand for female services

*Network opportunities:*
existence of an ethnic and informal network
possibilities for the recruitment of personnel and the acquisition of capital

*Network opportunities:*
existence of a female network in terms of information exchange

*Management opportunities:*
different management styles and enterprise structures

*Management opportunities:*
different management styles and enterprise structures

**ETHNIC
FEMALE
ENTREPRENEURSHIP**

**SUPPLY/SERVICES**

**SUPPLY/SERVICES**

*Financial obstacles:*
lack of capital and credit
lack of financial and managerial know-how
lack of knowledge

*Financial obstacles:*
lack of capital and credit
lack of financial and managerial know-how
lack of knowledge

*Ethnic-based obstacles:*
cultural and social values
language
lack of education
lack of management skills

*Female-based obstacles:*
cultural and social values
unconventional thinking
family responsibilities
lack of management skills
small amount of personal capital

*Network obstacles:*
exclusion from "non-ethnic" informal business networks
constraints on access to formal networks

*Network obstacles:*
exclusion from "old-boys" informal business networks

**PRESSURES**

*Opportunities obstacles:*
unequal opportunities (between natives and non-natives) in terms of work experience
ethnic discrimination

*Opportunities obstacles:*
unequal opportunities (between female and male) in terms of work experience
gender discrimination

*Administrative and regulatory barriers*

**BARRIERS**

Ethnic-Based Opportunities

Ethnic-Based Obstacles

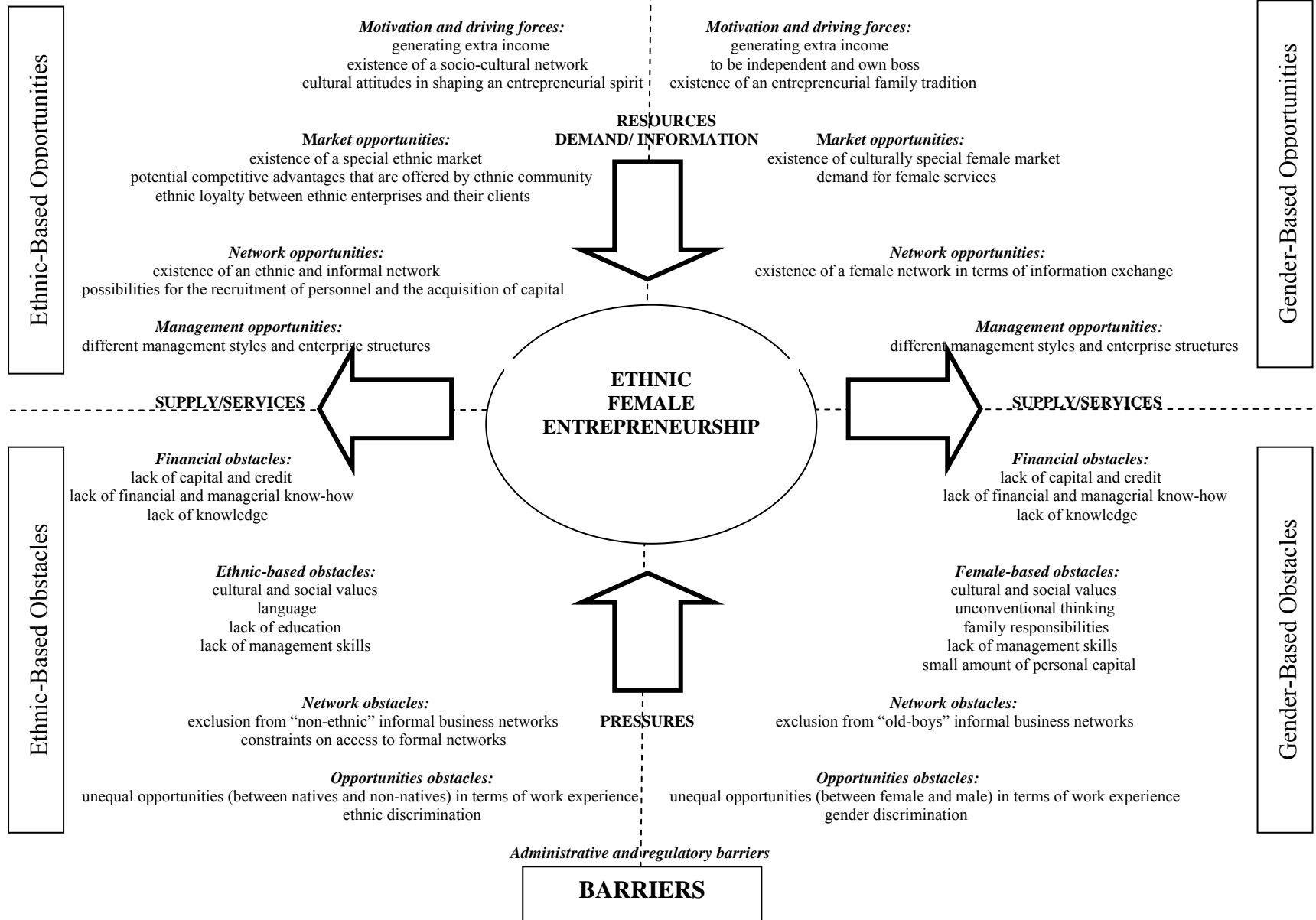Gender-Based Opportunities

Gender-Based Obstacles

Figure 1. Opportunities and barriers in ethnic female entrepreneurship (Source: Baycan-Levent et al. 2002)

men (Zhou and Logan, 1989). Occupational segregation by gender; discrimination; women's multiple roles as workers, mothers and wives; lack of access to information networks and capital account for much of women's disadvantage vis-à-vis men (Zhou and Logan, 1989; Gilbertson, 1995). Cultural factors play also an important role to foster this tendency. In general, women are expected (and expect also themselves) to earn wages in ways that do not conflict with their family obligations. Depending on cultural values, welfare of the family and community may have more priority than individual achievement (Zhou and Logan, 1989), so that, in this case the women's purpose would not be to develop a working career but to contribute immediately to the household income for the benefit of younger members. Enclave employment provides women with low wages, minimal benefits, and few opportunities for advancement (Gilbertson, 1995). Discrimination, occupational segregation, and work/family conflicts result in lower wages and fewer opportunities for women, regardless of labor market sector. Although a key advantage of enclave employment is access to resources that facilitate entrepreneurship, research shows that women in the mainstream economy encounter more barriers to self-employment than men. Therefore, enclave employment may be more exploitative of women (Gilbertson, 1995). On the other hand, as most studies indicate, the professional activities of women in an ethnic economy did not change their family-related workload, but actually increased their workload overall (Gilbertson, 1995; Hilmann, 1999; Zhou and Logan, 1989).

The findings of several studies show that many immigrants start their business after a discouraging experience in the traditional labor market, where they face language barriers, low wages, racial or ethnic discrimination, and sometimes exploitation. In general, for immigrant women self-employment is a potential way to escape from unemployment after having worked in industry or after the failure of the more qualified second generation to integrate in the general labor market (Hillmann, 1999). Therefore, self-employment is more of an advancement than a starting point of emancipation or an adaptation process. Or, self-employment for immigrant women is a way of achieving a respectable social status, even though it does not necessarily mean that they achieve high earnings (Constant, 2004).

According to the study of Pearce (2005), motivations for business ownership display varying patterns among immigrant women entrepreneurs according to national origin. For example, in the US several Chinese and Vietnamese women open their businesses in response to "pull factors", whereas Korean women open their businesses because business ownership was their only option to survive economically and Latinas in response to "push factors". Therefore, ethnic differences among entrepreneurs' motivations can vary from one location to another, and depend on social class differences, opportunity structures, and ethnic group relations in a particular location.

Morocvasic's (1988) study (in Hillmann 1999) on self-employed immigrant women in five European countries distinguished two groups of women entrepreneurs. A first group of self-employed women followed an individual strategy having had previous experience of institutionalized training. A second group adopted a more traditional strategy by continuing the same activity they were engaged in before becoming self-employed. Very few women were housewives before starting their own business.

According to Dallalfar (1994) entrepreneurial immigrant women are using the ethnic economy to engage in work activities that are more profitable than working as low-paid and devalued workers in businesses often owned by men. However, the results of two researches, Morocvasic's (1988) and Hillmann's (1999), show that the majority of self-employed immigrant women offered 'non-ethnic' products and services and they overwhelmingly addressed 'non-ethnic' consumers. For example, Turkish female entrepreneurs in Berlin (Hillmann, 1999) did not consider themselves as part of the 'ethnic economy', nor as 'typical of other Turkish women'. The trend towards a mainly non-ethnic orientation of Turkish

female entrepreneurs was confirmed by the nationality and the specialization of the suppliers of the sold goods, the composition of the clientele and the frequently mentioned disadvantages of the involvement of family members (hierarchical problems) in the business.

As observed in both migrant and female entrepreneurship, the orientation to the service sector is also the main feature of migrant female entrepreneurship. According to the report published by the Center for Women's Business Research (2004), in the US 61.0% of firms owned by women of color are in the service sector, whereas 12.4% are in retail trade; and 4.0% are in goods-producing industries including construction, mining, manufacturing, and agriculture. The greatest growth by industry in the number of firms owned by women of color from 1997 to 2004 has taken place in the services industry (55.8% growth), followed by transportation/communications/public utilities (47.3%) and agriculture (34.8%). Pearce's study (2005) states, on the hand, that the top industry for immigrant women business owners is working in private households, followed by child-day-care centers, and restaurants and other food services in the US. Nineteen of the top twenty industries in which these entrepreneurs work are service industries. Two of the top service industries for immigrant women business owners are real estate and management, scientific and consulting services where the potential for earnings is much higher than in many other service industries.

Pearce (2005) explained the higher concentration of entrepreneurial women in service industries by a number of factors: i) women enter fields related to services they already know (health care, cooking, cleaning, beauty care); ii) women often do not have access to the amounts of start-up capital needed for many industries; and iii) women may not be trained in the particular expertise needed for other fields. She emphasized that another possible explanation may be that entrepreneurial women stimulate or help incubate the businesses of other women.

The findings of several studies show that immigrant women entrepreneurs represent a potential source of continued new business growth that brings a broad range of international skills to the work force. They are not only creating job for themselves, they stimulate job creation by hiring other employees. It is estimated that businesses owned by women across nationalities today provide 12 million jobs in the U.S. (Pearce, 2005). Their economic contributions include also interest paid on loans, purchases of raw materials and wholesale goods, contracts for ancillary services, education and training for young entrepreneurs through internships and mentoring, purchase or leasing of business space, homeownership and rent for residences, and charitable contributions (Pearce, 2005).

This overview shows that the earlier phase of self-employment experience of immigrant women was a part of family strategy, whereas this trend has changed over the years after experiencing lower wages, minimal benefits and the multiple impacts of an enclave economy towards a new phase to escape from the subordination of women in patriarchal control mechanisms. Several examples or success stories illustrate that immigrant women are swiftly moving beyond their roles as small store owners and unpaid workers in their husbands' businesses (Hillmann, 1999; Pearce, 2005). Hillmann (1999) states in a speculative way that, while men dominate the ethnic economy through their activities and their orientation towards primarily ethnic clientele, women have to leave it if they do not want to remain in a subordinate position. Consequently, they are making in-roads into fields outside of the traditional "ethnic" and "feminine" occupations.

### 3. Turkish Female Entrepreneurs in Amsterdam: Empirical Results of a Case Study

#### 3.1. Preparatory remarks

In the present section, we will evaluate the empirical results of our case study research in two parts. In Sub-section 3.2. we will examine the profile of Turkish female entrepreneurs in terms of personal characteristics, motivation, driving force and entrepreneurial family tradition. And next, in Sub-section 3.3. we will examine the profile of Turkish female enterprises in terms of enterprise features, performance, and profiles of employees and clients. After this evaluation of the empirical results of our case study research, we will in the next section present an explanatory framework of the profiles for Turkish female entrepreneurs and enterprises based on a recently developed artificial intelligence method, viz. rough set analysis.

#### 3.2. Profile of Turkish female entrepreneurs

The empirical data of our research are based on in-depth personal interviews held among 34 Turkish female entrepreneurs who own and operate a firm in Amsterdam. In other words, all entrepreneurs in our sample are self-employed. As there is no disaggregated data in terms of the ethnicity and gender at the Chamber of Commerce, much information about the entrepreneurs was provided during the survey in an informal way using the ethnic networks and relations among entrepreneurs. Although there is no official or business organization for ethnic business, these ethnic networks and relationships were very useful to reach other entrepreneurs, especially those in the same sector. As a result, our sample represents all Turkish female entrepreneurs in Amsterdam that can be reached by using the ethnic networks among entrepreneurs.

*Personal characteristics of Turkish female entrepreneurs*

Female entrepreneurs are a heterogeneous and diverse group, but share also some common personal characteristics. Usually, female entrepreneurs are aged between 35 and 45, married with children and well educated (Brush 1992, CEEDR 2000, Fischer et al. 1993, Koreen 2001, Letowski 2001, Nielsen 2001, OECD 1998, OECD 2001a, Weeks 2001). The results of our survey show that the personal characteristics of the Turkish female entrepreneurs in Amsterdam are largely the same as the personal characteristics of female entrepreneurs in other countries. An examination of the personal characteristics of the entrepreneurs (Table 1) shows that more than half of the entrepreneurs (61,76%) falls between the age 31 and 40, and that most of them are married (73,53%) with children (82,35%, including divorced entrepreneurs). Almost 75% of the entrepreneurs graduated from secondary vocational schools and have no language problems in the Netherlands: more than 80% can speak Dutch fluently or good. This language ability depends also on their arrival year in the Netherlands. When we look at the arrival year in the Netherlands, we see that almost half of the entrepreneurs came between 1970 and 1980. And this rate increases to 70% for those who were born and came between 1961 and 1970. It means that the majority of the entrepreneurs have been more than 20 years in the Netherlands, while they also have had educational opportunities in the Netherlands.

Table 1 Personal characteristics of Turkish female entrepreneurs

|  | *Number of entrepreneurs* | *Share in total (%)* |
|---|---|---|
| ***Age*** | | |
| 21 - 25 | 5 | 14,71 |
| 26 - 30 | 5 | 14,71 |
| 31 - 35 | 8 | 23,53 |
| 36 - 40 | 13 | 38,23 |
| 41 - 45 | 3 | 8,82 |
| ***Marital status*** | | |
| Single | 2 | 5,88 |
| Married | 25 | 73,53 |
| Divorced | 7 | 20,59 |
| ***Family status*** | | |
| Without children | 6 | 17,65 |
| With children | 28 | 82,35 |
| ***Education level*** | | |
| Primary school level | 2 | 5,88 |
| Secondary school level | 2 | 5,88 |
| Middle vocational training | 25 | 73,53 |
| Higher vocational training | 4 | 11,77 |
| University | 1 | 2,94 |
| ***Language ability (Dutch)*** | | |
| Fluently | 21 | 61,76 |
| Good | 7 | 20,59 |
| Moderate | 6 | 17,65 |
| ***Arrival year in the Netherlands*** | | |
| born | 3 | 8,82 |
| 1961-1970 | 5 | 14,71 |
| 1971-1980 | 16 | 47,05 |
| 1981-1990 | 6 | 17,65 |
| 1991-2000 | 4 | 11,77 |
| ***Total*** | 34 | 100,0 |

*Motivation, driving force and entrepreneurial tradition of Turkish female entrepreneurs*

In the literature on entrepreneurship it is often mentioned that both migrant and female entrepreneurs start an enterprise with less labor market experience and less entrepreneurial experience (Brush 1992, Fischer et al. 1993, CEEDR 2000, Kalleberg and Leicht 1991, OECD 1998 and 2001a). Both migrant and female entrepreneurs start their business with a strong economic motivation such as generating extra income and are attracted by an entrepreneurial opportunity. (Brush 1992, Fischer et al. 1993, Kloosterman et al. 1998, Masurel et al. 2002, OECD 1998 and 2001a, Weeks 2001). However, some studies show the contradictory result that non-economic motives, like being independent, are more important in some countries (Letowski 2001, Nielsen 2001). It is often argued that migrant entrepreneurs tend to use their own capital or to obtain capital from their ethnic networks such as family members and friends (Deakins et al. 1997, Van Delft et al. 2000, Kloosterman et al. 1998, Lee et al. 1997, Masurel et al. 2002), while female entrepreneurs also tend to use their own capital or to obtain capital from family members (Bruce 1999, CEEDR 2000, OECD 1998 and 2001a, Verheul and Thurik 2001). On the other hand, some studies (Bruce 1999, Brush 1992, Letowski 2001) indicate that if female entrepreneurs have a self-employed husband or family members, the probability to become entrepreneur increases.

When we look at the position and the previous experience of Turkish female entrepreneurs in Amsterdam before the start (Table 2), we see that the majority (70,59%) of the entrepreneurs was employed and 20,59% was already active as an entrepreneur in their previous position. While 38,23% of the entrepreneurs had experience through employment,

Table 2 Motivation, driving force and entrepreneurial tradition of Turkish female entrepreneurs

|  | Number of entrepreneurs | Share in total (%) |
|---|---|---|
| *Position before starting* |  |  |
| Employed | 24 | 70,59 |
| Unemployed | 2 | 5,88 |
| Entrepreneur | 7 | 20,59 |
| Student | 1 | 2,94 |
| *Previous experience* |  |  |
| Through employment | 13 | 38,23 |
| Through entrepreneurship | 6 | 17,65 |
| Through school or study | 11 | 32,35 |
| None | 4 | 11,77 |
| *Entrepreneur's family members* | 27 | 79,41 |
| Husband | 8 | 23,53 |
| Parents | 14 | 41,18 |
| Brothers-sisters | 15 | 44,12 |
| Relatives | 16 | 47,05 |
| *The reasons to be entrepreneur* |  |  |
| To be independent | 23 | 67,65 |
| To be own boss | 24 | 70,59 |
| Work experience | 11 | 32,35 |
| Extra income | 9 | 26,47 |
| Family tradition | 4 | 11,77 |
| Dissatisfaction with previous employment | 3 | 8,82 |
| *Capital sources* |  |  |
| Own capital | 15 | 44,12 |
| Family or friends | 14 | 41,18 |
| Financial institutions | 11 | 32,35 |
| Other | 3 | 8,82 |
| *Total* | 34 | 100,0 |

32,35% had experience through school or study and 17,65% as entrepreneurs in their previous professional experience. The entrepreneurs who had no experience constitute only 11,77% of the total. These figures show that Turkish female entrepreneurs start often an enterprise with experience.

On the other hand, we see a very high rate of family members who are also entrepreneurs. This is one of the most important results of this study. Almost 80% of Turkish female entrepreneurs have at least one entrepreneur family member (Table 2). The high rate of parents (41,18%), brothers-sisters (44,12) and also relatives (47,05%) who are entrepreneurs show that entrepreneurial family tradition is a very important driving force for Turkish female entrepreneurs. It seems plausible, besides their personal experience in the labor market, they benefit also from this entrepreneurial experience of the family and this entrepreneurial spirit pushes or encourages them to become entrepreneur. These figures show also that the entrepreneurial spirit of Turkish female entrepreneurs is a not husband matter, but heavily parental matter.

The other indicator supporting this entrepreneurial tradition is the motivation of the entrepreneurs. The results of our study show that economic motivation, such as generating extra income, was not the first reason for Turkish female entrepreneurs to become entrepreneur (Table 2). Contrary, the most important reasons are to be independent (67,65%) and to be their own boss (70,59%) which can be interpreted as an entrepreneurial spirit. Only 26,47% of the entrepreneurs indicate that extra income is also a reason in their preference list to become entrepreneur. The low rate of continuation of family business tradition (11,77%) is a very interesting result, when it is compared with the rate of entrepreneur's family members. Although 80% of the Turkish female entrepreneurs have entrepreneur family members, only

11,77% indicate that their motivation originated from this tradition. This situation can be explained in that they separate the spirit to be independent or to be their own boss from this tradition.

When we look at the tendencies observed in the use or acquisition of capital, we see that 44,12% of the entrepreneurs have used their own capital, while 41,18% have obtained it from family or friends (Table 2). Sometimes, they have combined these two sources. Generally, they prefer to obtain capital from family rather than from financial institutions, because of the high interest rates. When they obtain capital from family members, they do not pay interest. On the other hand, 32,35% of the entrepreneurs have taken credits from financial institutions. However, most of them indicated that they have taken these credits on the names of their husbands or family members for two reasons. The first is that, when they applied to the financial institutions, they had stopped their previous job and were actually unemployed at that stage. And the second reason concerns the difficulties in obtaining credits as a result of a lack of experience as an entrepreneur. Most of them tried to obtain credit from financial institutions on their names, but after their first failure attempts, they used this second way and they obtained credits on the names of their husbands or family members.

If we evaluate all our findings, we can say that the profile of Turkish female entrepreneurs shows the following characteristics. Turkish female entrepreneurs are entrepreneurs who are between the age 30 and 40, married with children, were born or came in the Netherlands at least 20 years ago, and got therefore vocational and language education in the Netherlands; they have an experience as employee or entrepreneur in their previous position, have entrepreneur family members who support them morally and also financially, and originate from an entrepreneurial family tradition encouraging an entrepreneurial spirit to be independent or their own boss.

### 3.3. Profile of Turkish female enterprises

*The features of Turkish female enterprises*

In the literature on migrant and female entrepreneurship it is often mentioned that there are various similar characteristics in migrant and female enterprises (Brush, 1992; CEEDR, 2000; Deakins, 1999; Fischer et al., 1993; Kloosterman et al., 1998; Koreen, 2001; Lee et al., 1997; Letowski, 2001; Nielsen, 2001; OECD, 1998; OECD, 2001a; Ram, 1994; Weeks, 2001). The research shows that most migrant and female enterprises belong to the service sector, small-sized and relatively young, while family ownership for migrant enterprises and sole proprietorship for female enterprises are the legal form of most of the enterprises.

When we examine the features of Turkish female enterprises (Table 3), we see that all enterprises are in the service sector, except one in manufacturing (textile) and 80% of the enterprises are in four sectors successively, viz. driver school, hairdresser, fashion shop, and human resource management and temporary job agency. The specific activities of several enterprises show some distinct ethnic and female entrepreneurial opportunities. For example, in our sample more than one third of the enterprises (35,29%) are made up of driver schools, and this sector has appeared to serve clearly ethnic and female needs. The clients of these enterprises are Turkish women, and they prefer to learn from other Turkish women for two reasons. The first one is of course the language problem related to learning more easily from women and the second one depends on the cultural and religion reasons such as jealousy of their husbands. This market opportunity has attracted many women to this sector, while female entrepreneurs who work in this sector constitute also "role models" for their clients. Besides this market opportunity, related opportunities such as the low capital intensity of this sector and the flexibility of working hours cause also a growth in this sector. This kind of

Table 3 Features of Turkish female enterprises

|  | Number of enterprises | Share in total (%) |
|---|---|---|
| **Activities of the enterprise** | | |
| Driver school | 12 | 35,29 |
| Hairdresser | 5 | 14,71 |
| Fashion shop | 6 | 17,65 |
| Human resource management-temporary job agency | 4 | 11,77 |
| Flowerhouse | 1 | 2,94 |
| Finance-insurance-tourism-real estate | 2 | 5,88 |
| Laundry | 1 | 2,94 |
| Press agency | 1 | 2,94 |
| Transport | 1 | 2,94 |
| Textile manufacturing | 1 | 2,94 |
| **Foundation year of enterprise** | | |
| 1986-1990 | 3 | 8,82 |
| 1991-1995 | 10 | 29,41 |
| 1996-2000 | 14 | 41,18 |
| 2001+ | 7 | 20,59 |
| **Starting situation of the enterprise** | | |
| Newly started | 25 | 73,53 |
| Taken over from family or friends | 3 | 8,82 |
| Taken over from alien in the same sector | 6 | 17,65 |
| **Proprietorship** | | |
| Sole proprietorship | 30 | 88,24 |
| Shareholder-husband-children | 1 | 2,94 |
| Shareholder-parents-sisters-brothers | 1 | 2,94 |
| Shareholder-other family members | 1 | 2,94 |
| Shareholder-alien | 1 | 2,94 |
| **Number of employees** | | |
| No employee | 17 | 50,00 |
| 1-5 employees | 14 | 41,18 |
| 13 employees | 1 | 2,94 |
| 23 employees | 1 | 2,94 |
| 48 employees | 1 | 2,94 |
| **Total** | 34 | 100,0 |

ethnic and female opportunity is less evident for the other sectors, some of them serve clearly ethnic and female needs, for example, special dressing for religious women by female hairdressers, but this is not a general trend for the entire sector. It can be said that they manage their businesses for economic reasons, and if there are some special market opportunities, they benefit from them; otherwise they do not take into consideration ethnic and female needs and they address other groups. For example, most fashion shop owners and hairdressers have indicated that they do not prefer Turkish clients because of their consumer behaviour -they do not spend more for dressing and caring-, and therefore they address other groups. Most entrepreneurs in other sectors were attracted by their work experience in relation to their knowledge of the market structure of the sector, while some have even taken over the firm they were employed by in the past. In summary, all entrepreneurs are attracted by an entrepreneurial opportunity.

On the other hand, we observe that there is an increase in start-up enterprises after 1990. Especially between 1996 and 2000, 14 enterprises (41,18% of the total) have started and this number is higher than the number of the enterprises that have started in the previous two periods. This increasing trend has also continued after 2000 and constitutes more than 20% of the enterprises. Therefore, we can say that a clear female entrepreneurship in Turkish immigrant groups has occurred in the last decade and that more than 90% of the Turkish female enterprises has started after 1990.

When we look at the starting position of the enterprises, 73,53% of the enterprises has newly started and 17,65% are taken over from aliens in the same sector. Sole proprietorship forms the legal form of most of the enterprises (88,24%). On the other hand, most of the enterprises are small (91,18%), while 50% of the enterprises has no employee, and 41,18% has less than five workers.

*Performance of Turkish Female Enterprises*

It is often argued that migrant entrepreneurs and female entrepreneurs show a low performance and success rate (Brush 1992, Brush and Hisrich 1999, Buttner and Moore 1997, Fischer et al. 1993, Kalleberg and Leicht 1991, Rietz and Henrekson 2000, Rosa et al. 1994); especially the success of migrant entrepreneurs depends on their ethnic networks and support obtained from this network (Deakins 1999, Kloosterman et al. 1998, Lee et al. 1997, Masurel et al. 2002).

When the development of sales and the profit of last year is examined for Turkish female enterprises in terms of their performance, almost half of the enterprises (44,12%) has an increase in sales, while 23,53% have about the same level (Table 4). Particularly old enterprises do not exhibit a rise in sales which can be explained by a balanced and stable development level. The entrepreneurs of these old enterprises emphasized the duration of their economic activities in explaining their sales or development. Only 11,77% of the enterprises have a declining profit position. For the enterprises that have recently started (20,59%) there is no unambiguous information; however, several entrepreneurs indicated a positive and increasing trend. Nevertheless, when we examine the profit of last year, their success can be seen more clearly; 61,76% of the entrepreneurs had a positive profit, while 14,71% had the same profit. The rate of negative profit is only 2,94%. Here there is neither information on the enterprises that recently started (20,59%). These figures show a rather high economic performance.

Table 4 Performance of Turkish female enterprises

|  | *Number of enterprises* | *Share in total (%)* |
|---|---|---|
| *Development of sales* | | |
| Increase | 15 | 44,12 |
| Decrease | 4 | 11,77 |
| Same | 8 | 23,53 |
| Don't know | 7 | 20,59 |
| *Profit last year* | | |
| Positive | 21 | 61,76 |
| Negative | 1 | 2,94 |
| Same | 5 | 14,71 |
| Don't know | 7 | 20,59 |
| *Total* | 34 | 100,0 |

*Profile of employees and clients of Turkish female enterprises*

In the literature on migrant entrepreneurship, it is often argued that migrant entrepreneurs tend to hire employees of their own ethnic group and they tend to use their personal and ethnic networks in order to recruit new employees. (Deakins et al. 1997, van Delft et al. 2000, Kloosterman et al. 1998, Lee et al. 1997, Masurel et al. 2002). In general, they tend to run their enterprises with partners who are family members or relatives.

In discussing the features of Turkish female enterprises, it is noteworthy that most of the enterprises are small; 50% of the enterprises has no employee and 41,18% has less than five workers. When we examine the composition of the employees, it is seen that almost two

third of the employees are Turk (61,16%) (Table 5). The high rate of Turkish employees clearly shows that Turkish female entrepreneurs tend to hire employees of their own ethnic group. On the other hand, while female workers constitute 58,68% of the total employees, the share of male workers is 41,32%. Although the rate of female workers is higher than the rate of male workers, there is no big difference between these two groups and not clear evidence for the preferences for the female employees. Their preferences depend also on the sectors' structures and needs.

Table 5 Profile of employees and clients of Turkish female enterprises

|  | *Number of employees* | *Share in total (%)* |
|---|---|---|
| *Composition of employees* |  |  |
| Total employees | 121 | 100,00 |
| Nationality of employees |  |  |
| Turkish employees | 74 | 61,16 |
| Non-Turkish employees | 47 | 38,84 |
| Sex of employees |  |  |
| Male employees | 50 | 41,32 |
| Female employees | 71 | 58,68 |
|  | *Number of enterprises* | *Share in total (%)* |
| *Composition of clients (%)* |  |  |
| Types of clients |  |  |
| Individual clients | 28 | 82,35 |
| Male clients | 28 | 25,00 |
| Female clients | 28 | 75,00 |
| Firms | 6 | 17,65 |
| Nationality of clients (individual clients + firms) |  |  |
| Turkish clients | 34 | 44,00 |
| Non-Turkish clients | 34 | 56,00 |
| *Total* | 34 | 100,0 |

As emphasized in the previous section on the features of Turkish female enterprises, the specific activities of several enterprises show some distinct ethnic and female entrepreneurial opportunities. Some activities have appeared to serve for clear ethnic and female needs, some others address other groups. When we examine generally the composition of the clients regardless of the sector, we see that most enterprises serve individual clients (82,35%), while few others serve firms (17,65%). And female clients constitute the majority with a rate of 75% of the individual clients. On the other hand, when we look at the nationality of the clients, we see that although there is no big difference, the rate of non-Turkish clients (56%) is higher than the Turkish clients (44%). Thus, it can be said that the orientation on clients of the Turkish female enterprises has changed in most activities. However, the services that the enterprises offer to their clients are largely provided by their ethnic employees.

If we evaluate all our findings, we can say that the profile of Turkish female enterprises shows the following features. Turkish female enterprises are small enterprises which have emerged in the last decade, belong to the service sector, show a rather high economic performance, serve clear ethnic and female needs on the one hand, and non-ethnic but clearly female needs on the other hand. These features however, which are in a stage of change in terms of orientation on clients from ethnic towards non-ethnic, are still supported by the ethnic network in hiring employees.

## 4. Explanatory Framework for the Profiles of Turkish Female Entrepreneurs and Enterprises

### 4.1. Rough set analysis: introduction

Our explanatory framework for the identification of the most prominent characteristics of ethnic female entrepreneurs is based on a specific recently developed artificial intelligence method viz. *rough set analysis*. Rough set data analysis (RSDA) is a classification method developed by Pawlak (1991) for the analysis of non-stochastic (including qualitative and nominal) information. RSDA is an application of Knowledge Discovery in Databases which is concerned with extracting useful information from a complex multivariate data base (Fayyad et al., 1996). Rough set data analysis is based on minimal model assumptions in terms of formal causal specifications and admits ignorance when no proper conclusion can be drawn from the data at hand (Ziarco, 1998). Hence, it is more exploratory and heuristic in nature. RSDA draws all its information from the a priori given data set. In other words, RSDA remains at the level of an empirical system: more precisely, the implicit formal and the empirical system coincide and the multidimensional scaling acts then the identity function. In RSDA, there is no numerical system that is different from the operationalisation of the observed data, and there are no outside parameters to be chosen, nor is there any deductive statistical model to be fitted. RSDA can be viewed as a preprocessing device to recognize the potentially important explanatory variables. Data reduction is the main feature of RSDA, as it allows to represent hidden structures in the database. It should be stressed here that rule induction in itself is not a part of rough set theory. It can rather be seen as a tool for preparing data for induction especially for defining classes for which rules are generated. The final outcome of the data base is a decision table from which decision rules can be inferred by using rough set analysis. The rules are logical statements (if…then) which represent the relationship between the description of objects and their assignment to particular classes (see Pawlak 1991; 1992). Details on rough set analysis both from a methodological and from an applied perspective can inter alia be found in Degoun et al., 1997, Famili et al., 1997, Fayyad et al., 1996, Pawlak, 1991, 1992, Slowinski, 1995, van Delft et al., 2000, van den Bergh et al., 1998 and Ziarco, 1998.

The rough set analysis in our study is carried out with the help of the computer program Rough Set Data Explorer (ROSE)[1]. This software system is able to deal with the basic elements of rough set theory and the related rule discovery techniques. We use the ROSE software in our study to identify the determinant factors behind the driving forces, motivation and performance in ethnic female entrepreneurship. In our study, the data system on ethnic female entrepreneurs can be regarded as a mixed (qualitative and quantitative) database that is suitable for classification and explanation. Rough set analysis acts then as a specific multidimensional classification approach that appears to be able to identify various important factors that are responsible for motivation and performance of ethic female entrepreneurs. In the next section, we will offer the results of the rough set analysis applied to Turkish female entrepreneurs in Amsterdam.

### 4.2. Empirical results: driving forces, motivation and performance of Turkish female entrepreneurs

As mentioned above, rough set analysis is essentially a classification method devised for non-stochastic information. The application of rough set analysis proceeds in two successive

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[1] The ROSE software is available at: http://www-idss.cs.put.poznan.pl/rose/.

steps: the construction of an information survey and the classification of information contained in the survey. In our case, the information survey consists of experiences of Turkish female entrepreneurs in terms of driving forces, motivation and performance. This information survey which contains characteristics (attributes) of Turkish female entrepreneurs is given in the previous section in a set of tables that includes from Table 1 to Table 5. The next step, the classification of information contained in the survey, is one of the most problematic issues in the application of rough set analysis, as the chosen thresholds are not always unambiguous and hence may also lead to information loss. In general, some sensitivity analysis on the classification used is meaningful, as a balance needs to be found between homogeneity and class size. In our case, after some sensitivity analyses the categories for each relevant attribute are defined and listed in Table 6. Next, on the basis of these categories, the resulting coded information table is constructed (Table 7).

Table 6 Classification of variables investigated

| **Arrival year in the Netherlands** | | **Number of employees** | |
|---|---|---|---|
| 1 | born | 1 | no employee |
| 2 | 1961-1980 | 2 | 1-5 employees |
| 3 | 1981-2000 | 3 | 5+employees |
| **Education level** | | **Nationality of employees** | |
| 1 | primary | 1 | no employee |
| 2 | medium vocational and secondary | 2 | only Turk |
| 3 | higher vocational and university | 3 | only non-Turk |
| **Language (Dutch ability)** | | 4 | mixed |
| 1 | fluently | **Gender of employees** | |
| 2 | good | 1 | no employee |
| 3 | moderate | 2 | male |
| **Position before starting** | | 3 | female |
| 1 | employed | 4 | mixed |
| 2 | unemployed | **Nationality of clients** | |
| 3 | entrepreneur | 1 | Turk majority |
| 4 | student | 2 | non-Turk majority |
| **Entrepreneur family members** | | 3 | mixed |
| 1 | yes | **Gender of clients** | |
| 2 | no | 1 | male majority |
| **Reasons to be entrepreneur** | | 2 | female majority |
| 1 | to be independent and own boss | 3 | firm |
| 2 | other reasons | 4 | mixed |
| **Foundation year of the enterprise** | | **Sector** | |
| 1 | 1986-1990 | 1 | human resource management |
| 2 | 1991-1995 | 2 | driver school |
| 3 | 1996-2000 | 3 | fashion shop |
| 4 | 2001+ | 4 | hairdresser |
| **Starting situation of the enterprise** | | 5 | other services |
| 1 | newly started | **Development of sales** | |
| 2 | taken from alien | 1 | increase |
| 3 | taken from family and friends | 2 | non-increase |
| **Capital sources** | | **Profit last year** | |
| 1 | own+family and friends | 1 | positive |
| 2 | financial institutions | 2 | non-positive |
| 3 | other | | |

Our rough set framework consists of totally 18 variables whereas 16 of them are attribute variables, 3 of them decision variables. The variable of 'reasons to be entrepreneur' is used both as an attribute and a decision variable. As a decision variable while 'reasons to be entrepreneur' refers to motivation and driving forces, the other 2 decision variables, 'development of sales' and 'profit last year', constitute performance variables. The ROSE

**Table 7 Codified information table on Turkish female entrepreneurs**

| | TURKISH FEMALE ENTREPRENEURS | | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Entrepreneur Characteristics | | | | | | | Enterprise Features | | | | | | | | | | |
| | A1 | A2 | A3 | A4 | A5 | A6 | A7 / D | A8 | A9 | A10 | A11 | A12 | A13 | A14 | A15 | A16 | D1 | D2 |
| No | arrival year in the Netherlands | education level | Dutch ability | position before starting | previous experience | entrepreneur family members | reasons to be entrepreneur | foundation year of the enterprise | starting situation of the enterprise | capital sources | number of employees | nationality of employees | gender of employees | nationality of clients | gender of clients | sector | development of sales | profit last year |
| 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 1 | 1 | 1 |
| 2 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 4 | 3 | 2 | 2 | 2 | 1 | 1 |
| 3 | 3 | 1 | 3 | 2 | 4 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 1 |
| 4 | 2 | 3 | 1 | 1 | 4 | 1 | 1 | 3 | 1 | 3 | 3 | 4 | 4 | 3 | 3 | 1 | 1 | 1 |
| 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 4 | 4 | 1 | 1 |
| 6 | 2 | 2 | 1 | 1 | 4 | 1 | 1 | 3 | 1 | 3 | 2 | 4 | 2 | 1 | 1 | 5 | 1 | 1 |
| 7 | 2 | 3 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 3 | 4 | 2 | 4 | 5 | 1 | 1 |
| 8 | 2 | 2 | 1 | 3 | 2 | 1 | 2 | 1 | 3 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 1 |
| 9 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 2 | 2 |
| 10 | 3 | 1 | 3 | 3 | 2 | 1 | 1 | 4 | 2 | 1 | 1 | 1 | 1 | 2 | 4 | 5 | 2 | 2 |
| 11 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 4 | 1 | 1 |
| 12 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 2 |
| 13 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 1 |
| 14 | 3 | 2 | 3 | 1 | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| 15 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 3 | 2 | 4 | 2 | 3 | 1 | 2 | 2 |
| 16 | 3 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 4 | 2 | 2 | 4 | 1 | 1 |
| 17 | 3 | 2 | 3 | 3 | 3 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| 18 | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| 19 | 3 | 2 | 3 | 2 | 4 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| 20 | 2 | 2 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| 21 | 3 | 3 | 1 | 4 | 3 | 1 | 2 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 3 | 5 | 2 | 2 |
| 22 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 4 | 2 | 4 | 4 | 1 | 1 |
| 23 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 2 | 4 | 4 | 1 | 1 |
| 24 | 1 | 2 | 3 | 1 | 3 | 1 | 2 | 4 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| 25 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 4 | 1 | 2 | 2 | 1 | 1 |
| 26 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 2 | 1 |
| 27 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 3 | 1 | 1 | 5 | 1 | 1 |
| 28 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 | 1 | 1 | 2 | 2 | 4 | 2 | 3 | 5 | 1 | 1 |
| 29 | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| 30 | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 |
| 31 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 4 | 3 | 1 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 |
| 32 | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 |
| 33 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 3 | 4 | 4 | 2 | 2 | 3 | 1 | 1 |
| 34 | 2 | 2 | 1 | 1 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 1 |

software is applied for each of these 3 decision variables independently and the results of the analysis are evaluated on the basis of these decision variables in order to highlight the determinant factors (attribute variables) behind the motivation and performance of Turkish female entrepreneurs.

In the application of the rough set analysis, three main sets of indicators and outputs, viz. the reducts and the core, the lower and upper approximation, and rules, can be calculated.

(1) The *reduct* -in other words, *a minimal set of attributes*- is the least minimal subset which ensures the same quality of classification as the set of all attributes. Intersection of all reducts/minimal (in other words, an attribute that appears in all minimal sets) is defined as the *core*. The core is a collection of the most significant attributes for the classification in the system. The reducts and core for each set of data on the basis of three decision variables are given in Table 8, Table 9 and Table 10.

Table 8 Reducts and core: Reasons

| | |
|---|---|
| **Reduct** | Set no. 1 {A3, A5, A8, A16} |
| | Set no. 2 {A3, A6, A8, A15, A16} |
| | Set no. 3 {A3, A8, A10, A12, A16} |
| | Set no. 4 {A3, A4, A10, A12, A16} |
| | Set no. 5 {A3, A8, A12, A15, A16} |
| | Set no. 6 {A3, A8, A10, A13, A16} |
| | Set no. 7 {A3, A8, A12, A13, A16} |
| | Set no. 8 {A3, A8, A13, A14, A16} |
| | Set no. 9 {A3, A4, A10, A13, A16} |
| | Set no. 10 {A3, A8, A13, A15} |
| **Core** | {A3} |

Table 9 Reducts and core: Development

| | |
|---|---|
| **Reduct** | Set no. 1 {A5, A8, A13, A16} |
| | Set no. 2 {A5, A8, A10, A16} |
| | Set no. 3 {A6, A8, A10, A15, A16} |
| | Set no. 4 {A8, A12, A13, A16} |
| | Set no. 5 {A8, A10, A12, A16} |
| | Set no. 6 {A8, A13, A14, A16} |
| | Set no. 7 {A5, A8, A11, A16} |
| | Set no. 8 {A6, A8, A11, A15, A16} |
| | Set no. 9 {A8, A12, A15, A16} |
| | Set no. 10 {A8, A13, A15, A16} |
| **Core** | {A8} |

Table 10 Reducts and core: Profit

| | |
|---|---|
| **Reduct** | Set no. 1 {A2, A8, A13} |
| | Set no. 2 {A4, A8} |
| | Set no. 3 {A5, A8, A13} |
| | Set no. 4 {A8, A10, A13} |
| | Set no. 5 {A8, A12, A13} |
| | Set no. 6 {A8, A13, A14} |
| | Set no. 7 {A5, A8, A16} |
| | Set no. 8 {A6, A8, A15, A16} |
| | Set no. 9 {A8, A12, A15, A16} |
| | Set no. 10 {A8, A13, A15} |
| **Core** | {A8} |

Ten sets of reducts for each data set and two different core attributes are found. The core attribute of the first data set, reason to be entrepreneur, is *A3 (language (Dutch ability))* whereas the core attribute of the following two data sets, development of sales and profit last year, is *A8 (foundation year of the enterprise)*. As can be seen in the Table 8, 9 and 10 without these two core attributes it is impossible to classify the results of the reasons to be entrepreneur, development of sales and profit last year. This means that these attributes strongly influence the motivation and performance of the entrepreneurs.

Next, the relative frequencies of appearance of the condition attributes in the reducts for each data set are given in Table 11, Table 12 and Table 13. After core attribute A3, two other attributes, viz.*, A8 (foundation year of the enterprise)* and *A16 (sector)* in the reasons to be entrepreneur and after core attribute A8, three different attributes, viz., *A13 (gender of employees), A15 (gender of clients),* and *A16 (sector)* in the development of sales and profit last year, appear as relatively important attributes with higher frequency rates.

Table 11 Frequency of attributes in reducts: Reasons

| Attribute | Frequency | Frequency % |
|---|---|---|
| **A3.** Language (Dutch ability) | 10 | **100** |
| **A4.** Position before starting | 2 | 20 |
| **A5.** Previous experience | 1 | 10 |
| **A6.** Entrepreneur family members | 1 | 10 |
| **A8.** Foundation year of the enterprise | 8 | **80** |
| **A10.** Capital sources | 4 | 40 |
| **A12.** Nationality of employees | 4 | 40 |
| **A13.** Gender of employees | 5 | 50 |
| **A14.** Nationality of clients | 1 | 10 |
| **A15.** Gender of clients | 3 | 30 |
| **A16.** Sector | 9 | **90** |

Table 12 Frequency of attributes in reducts: Development

| Attribute | Frequency | Frequency % |
|---|---|---|
| **A5.** Previous experience | 3 | 30 |
| **A6.** Entrepreneur family members | 2 | 20 |
| **A8.** Foundation year of the enterprise | 10 | **100** |
| **A10.** Capital sources | 3 | 30 |
| **A11.** Number of employees | 2 | 20 |
| **A12.** Nationality of employees | 3 | 30 |
| **A13.** Gender of employees | 4 | **40** |
| **A14.** Nationality of clients | 1 | 10 |
| **A15.** Gender of clients | 4 | **40** |
| **A16.** Sector | 10 | **100** |

Table 13 Frequency of attributes in reducts: Profit

| Attribute | Frequency | Frequency % |
|---|---|---|
| **A2.** Education level | 1 | 10 |
| **A4.** Position before starting | 1 | 10 |
| **A5.** Previous experience | 2 | 20 |
| **A6.** Entrepreneur family members | 1 | 10 |
| **A8.** Foundation year of the enterprise | 10 | **100** |
| **A10.** Capital sources | 1 | 10 |
| **A12.** Nationality of employees | 2 | 20 |
| **A13.** Gender of employees | 6 | **60** |
| **A14.** Nationality of clients | 1 | 10 |
| **A15.** Gender of clients | 3 | **30** |
| **A16.** Sector | 3 | **30** |

(2) The *lower and upper approximation* -and derived accuracy of relationships for each value class of the decisional variable- is another indicator from a rough set analysis. The latter is the lower divided by the upper approximation of each class. Accuracy and quality of classification can also be derived from the choice of thresholds. The results are shown in Table 14, Table 15 and Table 16. For all classes of reasons, development of sales and profit last year the accuracy appears to be 1. Also the accuracy and quality of classification are equal to 1. This value is the maximum value in all these cases. This means on the basis of the chosen characteristics female entrepreneurs and enterprises in our sample are fully discernible regarding the classes of decision variables.

Table 14 Accuracy and quality of the classification of the reasons to be entrepreneur

| Reasons class | Accuracy | Lower approximation | Upper approximation |
|---|---|---|---|
| Independent | 1 | 23 | 23 |
| Other factors | 1 | 11 | 11 |

Accuracy of classification:    1

Quality of classification:    1

Note: The accuracy for each class is the lower divided by the upper approximation.

Table15 Accuracy and quality of the classification of the development of sales

| Development class | Accuracy | Lower approximation | Upper approximation |
|---|---|---|---|
| Increase | 1 | 23 | 23 |
| Non-increase | 1 | 11 | 11 |

Accuracy of classification:    1

Quality of classification:    1

Note: The accuracy for each class is the lower divided by the upper approximation.

Table 16 Accuracy and quality of the classification of the profit

| Profit class | Accuracy | Lower approximation | Upper approximation |
|---|---|---|---|
| Increase | 1 | 26 | 26 |
| Non-increase | 1 | 8 | 8 |

Accuracy of classification:    1

Quality of classification:    1

Note: The accuracy for each class is the lower divided by the upper approximation.

(3) The *rules* -exact or approximate relationships between explanatory variables and dependent variables- offer the possibilities to extract conditional causal structures from our data set. Decision rules are conditional statements that are expressed in the form of "if-then" statements. A rule may be exact or approximate. An exact rule (or deterministic) guarantees that a particular combination of categories of the condition attributes results in only one particular category of the decision attribute (same conditions, same decisions). An approximate rule (or non-deterministic), on the other hand, states that a particular combination of categories of the condition attributes corresponds to more than one category of the decision attribute (same conditions, different decisions). Therefore, only in the case of exact rules, using the information contained in the decision table, it is always possible to state with certainty whether an object belongs to a certain class of the decision variable. The quality of the decision rule is indicated by its strength. The strength of a rule represents the number of observations or cases that are in accordance with that rule. Table 17, Table 18 and Table 19 show the rules and their strengths that can be generated from our data set. This information enables us to classify female entrepreneurs under which conditions they are successful and which kind of similarities can be found among them.

Table 17 Rules generated by the rough set analysis: Reasons

| Rules | Description of rules | Strength (#) | Strength (%) |
|-------|----------------------|--------------|--------------|
| Rule 1 | (A4 = 1) & (A8 = 3)  => (**D = 1**) | 9 | 39,13 |
| Rule 2 | (A3 = 1) & (A4 = 1) & (A5 = 3) => (**D = 1**) | 5 | 21,74 |
| Rule 3 | (A6 = 1) & (A8 = 4) & (A10 = 1) => (**D = 1**) | 5 | 21,74 |
| Rule 4 | (A3 = 1) & (A8 = 2) & (A14 = 2) => (**D = 2**) | 3 | 27.27 |
| Rule 5 | (A3 = 2) & (A13 = 1) => (**D = 2**) | 2 | 18,18 |
| Rule 6 | (A1 = 3) & (A6 = 2) => (**D = 2**) | 2 | 18,18 |

Table 18 Rules generated by the rough set analysis: Development

| Rules | Description of rules | Strength (#) | Strength (%) |
|-------|----------------------|--------------|--------------|
| Rule 1 | (A8 = 2) => (**D1 = 1**) | 10 | 43,48 |
| Rule 2 | (A8 = 3) & (A14 = 1) => (**D1 = 1**) | 4 | 17,39 |
| Rule 3 | (A13 = 3) => (**D1 = 1**) | 5 | 21,74 |
| Rule 4 | (A1 = 2) & (A13 = 4) => (**D1 = 1**) | 6 | 26,09 |

Table 19 Rules generated by the rough set analysis: Profit

| Rules | Description of rules | Strength (#) | Strength (%) |
|-------|----------------------|--------------|--------------|
| Rule 1 | (A8 = 2) => (**D2 = 1**) | 10 | 38,46 |
| Rule 2 | (A1 = 2) & (A8 = 3) => (**D2 = 1**) | 10 | 38,46 |
| Rule 3 | (A11 = 2) & (A15 = 2)=> (**D2 = 1**) | 5 | 19,23 |
| Rule 4 | (A8 = 3) & (A11 = 1) => (**D2 = 1**) | 6 | 23,08 |

As can be seen in Table 17, 18 and 19, all rules generated in the reasons to be entrepreneur and development of sales and profit of our information survey (using the classes of Table 7) are deterministic, in other words, all rules generated from our data set are exact rules.  Therefore, we can say that these exact rules offer a sufficient condition of belonging to a decision class.

An overall evaluation of the decision rules shows that especially six condition attributes, viz., A3 (language (Dutch ability)), A4 (position before starting), A6 (entrepreneur family members), A8 (foundation year of the enterprise), A11 (number of employees) and A13 (gender of employees) determine the motivation and performance of female

entrepreneurs. While (i) a relatively higher language ability, (ii) a working experience and (iii) entrepreneur family members motivate positively to become entrepreneur (Table 20), (i) a longer stay in the Netherlands and (ii) a longer entrepreneurial activity contribute positively to the performance of relatively older entrepreneurs whereas (i) an entrepreneurial family tradition, (ii) family capital as well as (iii) ethnic clients contribute positively to the performance of relatively younger entrepreneurs and enterprises (Table 21 and Table 22).

Table 20 Empirical Results: Rules / Reasons

| | IF | | | | | THEN |
|---|---|---|---|---|---|---|
| **Rule 1** | employed | + | 1996-2000 foundation | | | Independent |
| **Rule 2** | fluent Dutch | + | employed | + | school experience | independent |
| **Rule 3** | entrepreneur family | + | 2001+ foundation | + | family capital | independent |
| **Rule 4** | fluent Dutch | + | 1991-1995 | + | non-Turk clients | other factors |
| **Rule 5** | good Dutch | + | no employee | | | other factors |
| **Rule 6** | 1981-2000 arrival | + | no entrepreneur family | | | other factors |

Table 21 Empirical Results: Rules / Development

| | IF | | | THEN |
|---|---|---|---|---|
| **Rule 1** | 1991-1995 foundation | | | increase |
| **Rule 2** | 1996-2000 foundation | + | Turk clients | increase |
| **Rule 3** | female clients | | | increase |
| **Rule 4** | 1961-1980 arrival | + | mixed ($♀ + ♂$) clients | increase |

Table 22 Empirical Results: Rules / Profit

| | IF | | | THEN |
|---|---|---|---|---|
| **Rule 1** | 1991-1995 foundation | | | positive |
| **Rule 2** | 1961-1980 arrival | + | 1996-2000 foundation | positive |
| **Rule 3** | 1-5 employees | + | female clients | positive |
| **Rule 4** | 1996-2000 foundation | + | no employee | positive |

## 5. Retrospect and Prospect

In recent years, we have observed the first signs of a new stage in the urban economy, where migrant females seek for new opportunities in business. In parallel to the increasing trend in self-employment among immigrants and women, a new trend, viz. an increasing business ownership by migrant females or, in other words, migrant female entrepreneurship, has emerged as a novel phenomenon. The question is whether the new niche of migrant female entrepreneurship opens new perspectives for socio-economic cohesion or even integration. Although the number of studies on migrant female entrepreneurship is limited, the available literature highlights new perspectives for socio-economic cohesion and integration.

First, the available data show that migrant females comprise one of the fastest growing groups of business owners and that they are more entrepreneurial than their migrant-male and native-female counterparts. Although migrant males continue to have the highest rates of business ownership, the ownership among migrant females is moving closer to those of their male counterparts.

Second, although the orientation in migrant entrepreneurship is generally internal and depends on ethnic sources in terms of products, clients and employees, the orientation of migrant female entrepreneurs is generally towards non-ethnic products and services. An escape from an enclave economy as well as subordination in patriarchal control mechanisms is commonly observed among migrant females in the labor market. The trend towards a mainly non-ethnic orientation by migrant female entrepreneurs is a novel and interesting perspective for the future labor market.

Third, migrant female entrepreneurs may not only break their 'ethnic' chain, but also their 'feminine' chain and they make in-roads into fields outside of the traditional 'ethnic' and 'feminine' occupations.

And fourthly, the findings of several studies show that migrant women entrepreneurs represent a potential source of continued new business growth that brings a broad range of international skills to the work force. They are not only creating job for themselves, they stimulate job creation by hiring other employees.

The present paper has investigated migrant female entrepreneurship and the driving forces and motivations that push or pull migrant females towards entrepreneurship on the basis of a case study research among Turkish female entrepreneurs in Amsterdam. The findings from this study are the following.

The results of our analysis, based on rough set analysis, show that the critical conditions in the driving forces, motivation and performance of migrant female entrepreneurs have emerged in six factors/attributes: i) arrival year in the Netherlands; ii) education (language) and working experience; iii) foundation year of the enterprise; iv) size of the enterprise; v) gender and nationality of clients; vi) family support (capital and entrepreneurial tradition).

While *"a longer stay in the Netherlands"* and *"a longer lasting entrepreneurial activity"* contribute positively to the performance of relatively older entrepreneurs, *"an entrepreneurial family tradition"* and *"family capital"* as well as *"ethnic clients"* contribute positively to the performance of relatively younger entrepreneurs and enterprises. The reasons to become entrepreneur are also stemming from both *"language ability"* and *"working experience"* which are directly related to the years lived in the Netherlands.

The above findings are certainly provisional and call for more solid research. First, there is a need for a proper behavioral cultural-economic foundation of the emerging phenomenon of migrant female entrepreneurship. The opportunity costs of a regular market versus those in a risky entrepreneurial environment have to be weighed against each other. From an empirical perspective, it ought to be examined whether several motives and

achievements of migrant female entrepreneurs are country, gender or culture-specific. In this framework, there is a need for solid comparative research from different cities, using e.g. meta-analytic research techniques. This would also require a further analysis of regulations (formal and informal) and their impacts on the entrepreneurial market. So it is clear that the field of migrant female entrepreneurship may offer a fertile ground for original and policy-relevant research.

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