Delphi application in solicitation of qualitative risk factors for estimation of a perceived probability of default: Case of Karafarin Bank

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Abstract

Unreliability of financial statements in Iran has urged this country's financial services industry management to manipulate practices by which they could gain reliable risk scores for borrowers. This research extracts the most influential qualitative factors that would impact the default of a business relationship borrower. Solicitation of the factors is done through Delphi methodology. The mean weight of each factor is then calculated from grades given to each factor by the experts.

As a case study, lending relationships of a private bank, Karafarin Bank (KB), and hundred of its relationship borrowers , are examined and the credit committee of the bank is asked to rate these companies according to extracted attributes found by this research through Delphi method. The qualitative risk score of these companies are then derived and it is shown how this score could be used for estimation of a perceived default probability of customers.

Keywords: relationship lending, Delphi method, relationship risk factor, relationship risk score

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Introduction

It is the age of relationship marketing, an age in which making a sale is just the beginning, rather than the end, of a company-customer relationship. In the financial services industry as well, more than ever before, managers must understand their best customers' needs and prevent them from switching to other companies (Bharath, Dahiya, Saunders, & Srinivasan, 2007). It is now proposed that closer attention is paid to the long-term financial benefits, and other benefits, of retained customers the main reason being that competition in the marketplace has intensified. To achieve growth, it is argued, organizations must change their paradigm to that of relationship marketing (Lindgreen & Crawford, 1999). Relationship lending is then defined as a long-term implicit contract between a bank and its debtor (Elsas, 2005).

Banking industry in Iran is getting more and more competitive by the establishment of private banks in 2001, so banks are urged to manipulate practices by which they could gain competitive advantage over competitors. Fundamental means to obtain this goal would be maintaining relationships that are more profitable in long term for the bank and prerequisite of this practice would then be identification of risk factors, specifically for Iranian banks where the concept of relationship banking is a new perception. The financial ratios have been used for the past 6 years by Iranian banks for risk score estimation of customers, but since there is no accredited credit history available for customers in Iran and financial statements are unreliable, the error of such computations is on average 35% (Sabzevari, Soleymani, & Noorbakhsh, 2007) and makes these financial scores useless in decision making. There has recently been an urge from the management of some Iranian banks to have tools by which they could gain reliable risk rating method for their customers to complement the existing financial scores. So this research basically extracts the most important qualitative factors that would affect the relationship borrowers' risk in Iranian banking industry and would then compute a perceived qualitative probability of default of customers based on these scores.

Credit facilities (guarantees, loans, L/C's) are recognized as the most profitable services of a bank, so we have considered a B2B lending relationship as our unit of measurement.

A pioneer bank in adoption of relationship banking in Iran, Karafarin Bank (KB), has provided us with details of lending relationships with hundred of its business customers of whom sixty five firms have less than three months of past dues (called good customers in this paper) and thirty five firms have more than three months of past dues (called risky customers in this paper). The results of this research show that the qualitative risk score could be a good complement for financial score in countries with weak institutional framework.

The remainder of this paper is structured as follows. In the next section we will review the literature on relationship lending and its constructs. In section 3 we will briefly review the background and lending process at KB. Section 4 deals with the Delphi process for information solicitation and analysis of risk scores for the firms. We conclude with some managerial implications and future research directions in section 5.

Literature review

Gronroos (1994) suggests a relationship definition of marketing:

Marketing is to establish, maintain, and enhance relationships with customers and other partners, at a profit, so that the objectives of the parties involved are met. This is achieved by a mutual exchange and fulfilment of promises (Gronroos, 1994).

It is proposed that closer attention is paid to the long-term financial benefits, and other benefits, of retained customers the main reason being that competition in the marketplace has intensified. To achieve growth, it is argued, organizations must change their paradigm to that of relationship marketing (Lindgreen & Crawford, 1999).

In the financial services industry as well, more than ever before, managers must understand their best customers' needs and prevent them from switching to other companies (Chiu, Hsieh,Li, & Lee, 2005). One most successful approach to address these issues would

be relationship banking which according to Bharath et al. (2007) is that if a financial intermediary's decision to supply various services to a firm is based on borrower-specific information that the intermediary collects over multiple interactions (over time as well as across multiple products), and further, if this information is proprietary (available only to the borrower and the intermediary), the intermediary is engaged in relationship banking. In contrast, transaction-oriented banking is based on identical transactions with various customers, so that transaction based lending is financing according to that particular transaction rather than being aimed at an information based relationship (Boot, 2000). It is important for prudent lenders to gather information about the creditworthiness of the borrowers. There are several ways to obtain this information, but one method that is especially well suited for opaque firms is the development of long-term lender-borrower relationships (Elyasiani & Goldberg, 2004), which enables the lender to better know the borrower and offer suitable services at the right time to the right borrower. The aim of relationship banking then would be resolving problems of asymmetric information (Boot, 2000). As a subset of relationship banking, relationship lending is defined as a long-term implicit contract between a bank and its debtor (Elsas, 2005).

Researchers have mentioned several benefits of relationship lending (for lender) which could come from multiple sources such as the ability to share sensitive information, more flexible contracts, the ability to monitor collateral, and the ability to smooth out loan pricing over multiple loans (Bharath et al., 2007). They also show in their research that strong past lending relationships significantly increase the probability of securing future lending and investment banking business.

Many factors have been examined effective in relationship lending in financial service industry, an important one being the risk. The constructs of risk are investigated by many researchers and each of these researches indicates the risk factors for a specific financial service in a specific country. For instance the amount of return on sales and size of the firm for relationship borrowers of German banks are investigated (Behr & Guttler, 2007), or Ryals

and Knox (2007) have prepared a relationship scorecard for business customers of an insurance company according to nine main factors they have extracted from a KAM's team. These factors included number of customer relationships within the company, number of products bought by the customer, longevity of relationship or how good is the company's understanding of customer's company and industry (Ryals & Knox, 2007). Duration of a bank–borrower relationship is also investigated by Elsas (2005) and the basic idea is that duration reflects the degree of relationship intensity over time. The number of bank relationships is associated with a higher riskiness of the borrowers according to Foglia Laviola, & Reedtz (1998) because when a large number of lenders are involved, monitoring of the borrower tends to be weaker. Multiple banking relationships could also be due to inefficient judicial systems and poor enforcement of laws of a country, or even the size of the firm; the larger the firm, the more the number of relationships (Ongena & Smith, 2000).

Lending process in financial services

Iranian private banks started to establish in 2001 after a twenty-year gap, and now they add up to six banks. During the past 7 years, KB has been proved to be a pioneer not only in offering new services to its customers but also to adopt new banking concepts in Iran, one being the relationship banking concept. For this reason, we considered KB as the best potential for providing our case study. KB has officially established as the first Iranian privately-owned bank in operation on January 1, 2001.

Since lending relationship of KB and its business customers has been the subject of the case study in our research, we will take a look at lending technique at KB to get an understanding of ineffectiveness of this process which has motivated this bank to move towards relationship lending.

Lending technique at KB

When a loan application is filed by a firm at KB, the credit committee of the bank will decide on the amount of loan that could

be granted to the firm. This committee, which differs in number and expertise of members from one bank to another, includes four members at KB which decides on the basis of financial/non-financial criteria along with credit policies of the bank. The financial factors are mostly unreliable in Iran due to false or fake financial statements of the firms and non-financial criteria are checked by subjective knowledge of the committee members about the firm and its industry. The problem with non-financial criteria is that there is no valid reference of attributes for the committee members based on which they could decide. Each member would evaluate the firm according to his own frame of reference which would cause inaccuracy of final decisions.

According to Baas and Schrooten (2006), there are four types of lending in financial services in which the first is based on soft information and the other three are based on hard information. These lending techniques are shown in Table 1.

Table 1. Lending techniques adapted from (Baas & Schrooten, 2006)

Relationship lending is based on the experience of a given bank with a specific borrower and therefore on soft information collected over time. So if financial data is limited, relationship banking is the technique of choice.
Financial statement lending is based on evaluating information from the firm's financial statements. The decision to lend depends largely on the strength of the balance sheet and income statements.
Asset-based lending is principally based on the quality of the available collateral. This type of lending causes high monitoring costs and requires high-quality receivables and inventory available to pledge (Boot, 2000). That is why it is generally used as a substitute for relationship lending if the term of the relationship is short.
Small business credit scoring is an adaptation of statistical techniques used in consumer lending. In addition to information about the financial statements, the creditworthiness and history of the owner is heavily weighted (Frame, Srinivasan, & Woosley, 2001).

In Iranian financial services including KB, traditional asset-based lending is applied in which hard assets, such as real property, equipment, and inventories are pledged. In such an application, the bank's experts determine the value of the borrowing firm's assets, and if the total value of these assets is higher than the credit amount, the bank lends the money. If a firm fails to repay its debts, which is very common in Iran, the bank takes over pledged assets through a lengthy and a bureaucratic process and tries to sell those assets to the highest bidder in an auction. The lengthy process of collateral evaluation besides the lengthy process of collateral liquidation through judicial system (in case of default of customers), makes the lending process unfavorable both to borrowers and lenders in Iran. KB has chosen to move towards relationship lending due to flaws of current technique and so the risk of lending relationship has become a great issue for this bank. Next section will introduce the qualitative method of risk score modeling for this bank which is shown to be an efficient method to accompany current financial scoring methods.

Qualitative risk score modeling

Ryals and Knox (2007) in their research have prepared a relationship scorecard for business customers of an insurance company according to nine main factors they had extracted. Their factors were extracted by semi-structured interviews with KAM's (Key Account Management) team of an insurance company. This relationship risk scorecard was then used to analyze the 10 key accounts for which full data were available. In our research the extraction of the factors is done through Delphi method which is an expert survey. Delphi method's objective is to develop a technique to obtain the most reliable consensus of a group of experts (Okoli & Pawlowski, 2004). In our research we too needed to have a valid list of qualitative factors based on which a score could be assigned to customers. Delphi seemed a more suitable method than semi-structured interviews since the output of Delphi method would be a list of attributes on which the experts have consensus and this feature of this method would let us use this compromised list with

high certainty for further computations. The flowchart of the research is shown in Figure 1.

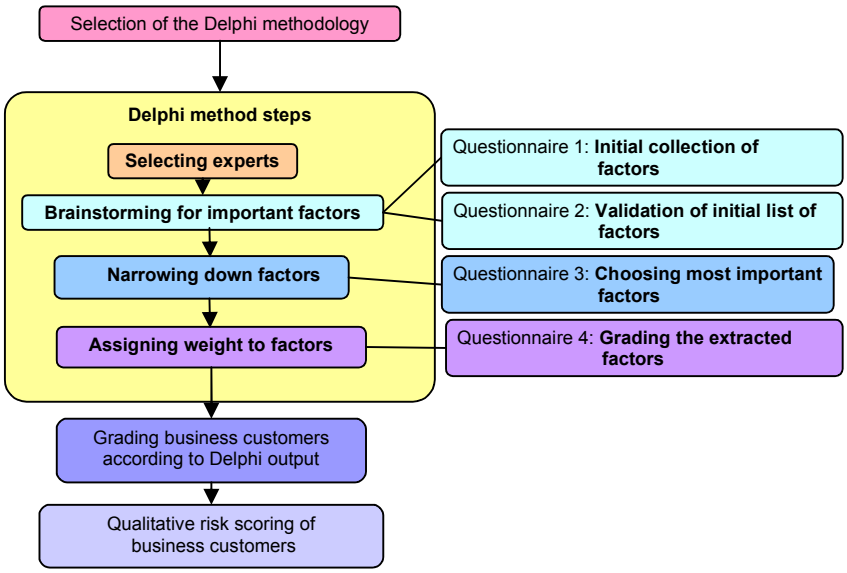

Figure 1. Flowchart of qualitative risk score modeling

In this section we will go through the Delphi process for extraction of risk attributes that affect the lender-borrower relationship, and then we discuss how to use it for estimation of qualitative risk score.

Delphi process

For the purpose of gathering attributes that are most influential in the continuation of relationship lending with a business client of a bank in Iran, Delphi method was conducted. In other words we wanted to solicit information from banking experts on qualitative risk factors of borrowers. The Delphi method was originated in a series of studies that the RAND Corporation conducted in the 1950s and the objective was to develop a technique to obtain the most reliable consensus of a group of experts (Okoli & Pawlowski, 2004). Delphi researchers employ this method primarily in cases where judgmental information is indispensable, and typically use a

series of questionnaires interspersed with controlled opinion feedback (Okoli & Pawlowski, 2004).

Delphi steps are shown in Figure 1 of section 1. In the first step, we had to choose our Delphi experts nationwide. The details of expert selection steps for Delphi method is shown in Figure 2.

Step 1: Prepare KRNW	• Identify relevant discipline or skills: academics, practitioners, government officials of NGOs • Identify relevant organizations • Identify relevant academic and practitioner literature
Step 2: Populate KRNW with names	• Write in names of individuals in relevant disciplines or skills • Write in names of individuals in relevant organizations • Write in names of individuals from academic and practitioner literature
Step 3: Nominate additional experts	• Contact experts listed in KRNW • Ask contacts to nominate other experts
Step 4: Rank experts	• Create four sub-lists, one for each discipline • Categorize experts according to appropriate list • Rank experts within each list based on their qualifications
Step 5: Invite experts	• Invite experts for each panel, with the panels corresponding to each discipline • Invite experts in the order of their ranking within their discipline sub list • Target size is 10-18 • Stop soliciting experts when each panel size is reached

Figure 2. Flowchart of expert selection for Delphi Method adapted from Okoli & Pawlowski (2004)

According to Okoli and Pawlowski (2004), we should divide experts into panels. Their size and constitution depends on the nature of the research question and the dimensions along which the experts will probably vary.

We chose the experts for our Delphi panel from two main categories of risk and credit. The reason for choosing these two panels was the purpose of our research. The credit experts had to be chosen since the target customers of our research are credit facility

applicants. The risk experts had to be on panel since we wanted to solicit qualitative factors that determine the risk of lending relationship. The experts were listed according to their work experience in banking sector and were nominated either by CEOs, head of branches, or managers of the six Iranian private banks. They were asked to introduce their risk and/or credit experts that they had in the bank or knew outside the bank. From 28 panelists of the two panels that we contacted, 23 accepted to participate and remained till the last questionnaire. Of these twenty three experts, seven were risk experts and the rest were credit experts.

The risk experts' average age was 39; they had an average of fifteen years of working experience in financial services, and were graduated at B.S or M.S levels in one of the following majors: Economics, Finance, management or engineering. One of the risk panelists had PHD in finance and around 38 years of working experience in financial services. The general information of risk panelists is provided in Appendix 1.

On the other hand, the credit experts' average age was 50; they were mostly experienced in banking with average of twenty six years of working experience. Their educational background was B.S in accounting, management, CS, and banking. Two of them had no official degree from any accredited college or institute past high school diploma. One of them was a masters student majoring in banking. The general information of credit panelists is provided in Appendix 2.

Next step was brainstorming the experts. For this step our first questionnaire was developed which could be found in Appendix 3. In this questionnaire, we asked panelists to bring up as many non-financial factors as they could that was, in their opinion and due to their experience, influential in the continuation of relationship with a relationship borrower. They were also asked to give a brief description of each factor they had mentioned, to help in categorization of the factors. The results of the first questionnaire (26 attribute) are brought in Appendix 4.

In the second questionnaire, we put extracted factors of first questionnaire along with experts' interpreted reasons and sent it

together with a copy of experts' responses to first questionnaire. We then asked experts to verify their answers. According to (Schmidt, 1997), ''without this step, there is no basis to claim that a valid, consolidated list has been produced.'' Some experts' lists had major changes in some cases such as adding factors to their own list and mentioning that they had forgotten to bring up those factors in their first questionnaire, or clarifying the interpretation of their reasons. Also three of the factors were identified as "influential factors in *commencement* of lending relationship with a *new* customer" by 18 experts. These factors were 1) relationship of the firm with its clients, 2) the performance of the firm in the banking system, and 3) the credibility of the referee of that firm to the bank, and were all omitted from our list. The other omitted factor was the extent of word of mouth the firm could bring for the bank which was considered "non-related to the research purpose" or "value creating indicator" by the experts, so was omitted from the list. So the output of this phase of our Delphi was a verified list of 22 factors.

In our third questionnaire we asked experts to identify (and not rank) at least 10 factors (from 22 factors) that they thought were the most important in risk of relationship lending. We then selected attributes with more than or equal to 12 votes (50%) which is a criteria set by Delphi researchers like Okoli and Pawlowski (2004). We repeated this step for three consecutive iterations and the final attributes were those which had got more than 50% of the votes in all three iterations. We got total of 13 attributes at this stage. The reason for omitting some attributes is that we want to find the attributes that experts have consensus on their importance.

In our last questionnaire we asked experts to grade the importance of each of these attributes from 1 indicating very poor, to 7 indicating very strong. The mean weight of each attribute was then calculated and is shown in table 2.

Table 2. Final Delphi extracted attributes and their weights

Factor	Mean weight
1.Competence capability	4.35
2. Degree of deregulation	5.13
3. Independency from imports	5.17
4.Client's market share	5.74
5. Domestic growth of firm's industry	5.13
6. Number of buyers	5.83
7. Number of suppliers	4.61
8. Management quality of the firm	6.39
9.Type of collateral and credibility of cosigners	5.13
10.Firm's production/sales capacity	5
11.Reliability of firm's financial statements	6.13
12.Longevity of relationship with bank	5.83
13.Firm's account activity with the bank	6.09

Qualitative risk score computations

Next we gave the list of extracted attributes to credit committee of KB (four members) and asked them to grade a list of 100 firms on basis of each solicited attribute, again on the scale of 1 (very poor) through 7 (very high). From the members of the committee only one member was completely familiar with the firms that we had chosen, so the grades were assigned by him. He was included in our Delphi panel and so did not entail any objection to the extracted Delphi attributes. For 25 firms, the head of the branch by which the credit facility was granted also graded the firms and the average of the two opinions was considered the final grade. One of the graders was included in our Delphi panel and the other one did not entail any objection to the extracted Delphi attributes. Scores of each firm was calculated by sum-product of mean grades of each

attribute by the mean weight of it divided by the maximum possible score which is the sum-product of maximum possible grade of each attribute and its weight. For instance Customer #1 has got the following grades for its 13 attributes: A1=1, A2=4, A3=7, A4=4, A5=2, A6=7, A7=5, A8=3, A9=5, A10=4, A11=3, A12=7, A13=3. Then each of these grades is multiplied by its corresponding mean weight indicated in Table 2 and then added together which yields 302.67 for this customer. This figure is then divided by 481.45 which is the sum-product of mean weight of each attribute and their maximum possible value. The maximum value of each attribute is 7. So 302.67/481.45 would yield 0.6286 which is the score of this customer. The closer the score is to 1, the lower the qualitative risk of relationship with that firm. The results are shown in table 3. The "performance" column of table 3 indicates the performance of each firm where 0 means past dues of less than three months, and 1 means past dues of more than three months. The performances of the firms are filled out from their files at KB.

Table 3. Firms' scores and their behavior

Customer ID	Qual Score	Performance	Customer ID	Qual Score	Performance
1	0.628663	0	51	0.741406	0
2	0.620376	0	52	0.496729	0
3	0.671056	0	53	0.567286	0
4	0.60702	1	54	0.504621	1
5	0.487423	1	55	0.436099	1
6	0.588057	0	56	0.522546	0
7	0.725745	0	57	0.500426	1
8	0.615703	0	58	0.495462	1
9	0.627687	0	59	0.472261	0
10	0.635331	0	60	0.71104	0
11	0.660525	0	61	0.681421	0
12	0.61807	0	62	0.600457	0
13	0.598089	0	63	0.479718	1
14	0.682314	0	64	0.74581	0
15	0.684017	0	65	0.709378	0
16	0.546516	0	66	0.468398	1
17	0.495856	1	67	0.695898	0
18	0.503209	1	68	0.605255	0

19	0.767619	0	69	0.477869	1
20	0.640336	0	70	0.505369	1
21	0.586582	0	71	0.517894	0
22	0.648977	0	72	0.531416	0
23	0.620604	0	73	0.500613	0
24	0.755572	0	74	0.533742	0
25	0.739371	0	75	0.612005	0
26	0.613667	0	76	0.785897	0
27	0.725932	0	77	0.581265	0
28	0.768076	0	78	0.481421	1
29	0.476228	1	79	0.416305	1
30	0.485803	1	80	0.576965	0
31	0.532496	1	81	0.489854	1
32	0.556589	0	82	0.523917	1
33	0.509731	1	83	0.703583	0
34	0.575408	1	84	0.753536	0
35	0.550234	0	85	0.347139	1
36	0.602721	0	86	0.513304	1
37	0.649164	0	87	0.709959	0
38	0.472614	1	88	0.585834	0
39	0.609471	0	89	0.720054	0
40	0.439049	1	90	0.469436	1
41	0.667504	0	91	0.462706	0
42	0.675917	0	92	0.501984	1
43	0.600561	0	93	0.481857	1
44	0.64015	0	94	0.488877	1
45	0.671804	0	95	0.440605	1
46	0.669955	0	96	0.717562	0
47	0.421394	1	97	0.617593	0
48	0.648956	0	98	0.680154	0
49	0.511019	1	99	0.691245	0
50	0.520656	1	100	0.484474	1

A perceived probability of default could be estimated based on these qualitative risk scores of customers of Table 3. For this purpose we could divide customers into three classes according to their developed scores for instance class of customers with scores lower than 50%, between 50% and 65%, and above 65%. These classifications are done in excel by trial and error to get the most reasonable results. Then we count the number of customers who

have had performance codes equal to 1 in each class and will divide that number by total number of customers in that segment. Table 4 shows the PDs calculated from customers risk scores.

Table 4. Probability of default of customers

Risk score	# of customers	Performance code = 1	PD
below 50%	24	22	91.67%
50% to 65%	48	13	27.08%
above 65%	28	0	0.00%

These PDs mean that for instance customers with qualitative score of less than 0.50 have 91% probability not to pay back their dues vs. customers with scores more than 0.65 who have 0% probability of default. Please note that in practice due to possible estimation errors we would consider the PD for this segment as an amount # 0% like 1% (in reality 0% PD is not possible).

Conclusion and managerial implications

In this paper, we tried to get an overview of the lending technique at KB which appears to be *asset-based* lending according to Baas and Schrooten (2006) categorization. This technique is unfavorable both to borrowers and lenders in Iran due to long and costly process taken for both parties which is a motivation for some banks including KB to move towards relationship lending technique. Risk of relationship lending then becomes a great issue for banking sector and since financial scoring does not give good results in Iran due to unreliability of financial statements of the firms, this research tried to find a qualitative risk scoring method to complement that of quantitative one.

Next we discussed the Delphi methodology for soliciting the most important qualitative risk factors of this new lending technique in Iran. Delphi method has originally been used in IS/IT researches but since in this research we needed to have consensus of credit and risk experts on most important factors that are influential in risk of lending relationship, we adjusted this method

for our research and illustrated the application of this method for risk scoring of lenders. The output of our Delphi method was thirteen attributes among which the management quality of the firm had the highest weight, and the reliability of financial statements of the firm and firm's checking account activity were respectively the next.

Risk factors like number of bought products or number of banking relationships which are emphasized in literature did not come out as significant factors on our final Delphi results. The reason could be that Iranian private banks are not competitive enough yet to offer variety of banking products. They also know it is extremely hard for a borrower to get involved in relationship lending with a bank due to limited number of private banks, so would hardly try having multiple of these relationships.

While the current probability of default of customers in Iran is not reliable due to unreliability of financial scores, the qualitative risk score that we estimated can be a helpful tool in PD calculations in banking as shown in this research. The perceived probability of default that we discussed could help the management of the bank in deciding which relationships could be modified with regards to the attributes that cause their low scores, and which relationships are worth special services to be maintained.

This risk score could also be used for loan pricing or for setting collateral conditions for customers by considering higher score customers as more profitable in long term so offering them lower interest rates or easy circumstances for collateralization. At the same time the bank should observe relationships of lower score more closely to avoid probable losses.

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Appendix 1. Risk experts' general information

Risk Expert	Age	Degree	Major	Work Experience
RE1	65	PHD	Finance	38
RE2	32	MS	EE,Finance	8
RE3	40	MS	Management	16
RE4	32	BS	Economics	8
RE5	24	MS	Economics	2
RE6	24	MS	Economics	3
RE7	58	BS	CS	30
Average	39.28571			15

Appendix 2. Credit experts' general information

Credit Expert	Age	Degree	Major	Working Experience
CE1	59	Diploma	Sciences	41
CE2	45	BS	Accounting	15
CE3	48	BS	Accounting	20
CE4	50	BS	Banking	30
CE5	45	BS	Accounting	15
CE6	48	BS	Accounting	20
CE7	54	BS	Management	32
CE8	39	BS	Management	12
CE9	58	BS	Banking	35
CE10	63	Diploma	Sciences	42
CE11	55	BS	Banking	31
CE12	48	MS	Banking	25
CE13	35	BS	CS	11
CE14	45	BS	Management	25
CE15	53	BS	Accounting	29
CE16	65	BS	Banking	42
Average	50.625			26.5625

Appendix 3. First questionnaire of Delphi method

Dear respondent,

As you know, the factors which are influential in continuation of lending relationship between a lender and a business borrower in financial services are divided into two main categories of qualitative and quantitative factors. The purpose of this questionnaire is to extract the qualitative factors that would indicate the risk of this relationship in Iran. Please note that by risk factors of lending relationship we mean factors that increase the probability of default of a relationship borrower.

According to what is said please identify as many factors as possible, which in your opinion and regarding to your experience, are influential in the riskieness of lending relationship with a business relationship borrower.

Please give a brief description of the reason for your choice if possible.

We sincerely appreciate your time in advance

Appendix 4. Initial list of experts' factors and summary of their reasons

Risk Factors	Summarized reason of the experts
Economic sector of the firm	Different economic sectors like agriculture, construction, … have different risks
Competence capability of the firm	The lower the number of competitors the lower the risk
Degree of deregulation	The less dependent the firm is from governmental regulations, the less risky since the governmental regulations are not stable
Growth rate of the firm's industry	The higher the domestic growth, the less the risk
Impact of inflation on firm's activity	The higher the impact, the higher the risk
Impact of imports on firm's activity	The higher the impact, the higher the risk

Market share of the firm	The higher the market share, the lower the risk
Performance of the firm in the banking system	The better the performance, the lower the risk
Relationship of the firm and its clients	The better the relationship the lower the risk
Number of suppliers	If the number and variety of suppliers is high, the risk is lower
Number of buyers	If the number and variety of buyers is high, the risk is lower
Extent of word of mouth the client can bring	The more the WOM, the less the risk of losing customer
Management quality of the firm	Experience of the management in the field, related education
Sales fluctuations of the firm	The higher the sales fluctuations, the higher the risk
Ratio of variable cost/ fixed cost	If high, means technology usage and/or internal management is weak, so the risk is high
Type/amount of collateral and reliability of cosigners	Liquidation capability and type of promissory notes, stocks, residential property, account receivable
Activity permits of the firm	The higher the compatibility of permits with activity, the lower the risk
Production capacity of the Firm	The higher the volume of production, the lower the risk
Reliability of the firm's financial statements	Five options identified from low risk to high risk: Audited financial statements, un-audited financial statements, tax statements, balance sheet only, no financial statement
Credit facilities' usage purpose	If the usage is beneficial and matches the firm's activities, the risk is lower
Longevity of the relationship	The longer you know the customer, the lower the information asymmetry, the lower the risk

Reliability of the referee	The more reliable the referee, the lower the risk
Number of bought services by the firm	Could be both positive or negative in terms of risk
Extent of account activity with the Bank	Concentration of checking account activities in the bank means more reliability and control
Extent of credit activities within the Bank	Concentration of credit activities in the bank means more reliability and control
Growth rate of the firm's credit activity with the bank	If the growth is high and matches the firm's activity growth, the risk is lower