Decision making of small scale industries and micro businesses under risk and uncertainty

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Abstract

Objectives: The study aims to find out whether past experiences of price risk, demand risk and business uncertainty affect the decisions made by Small Scale Industrialist and Micro Businessman.

Methods/Statistical analysis: Theprimary data was collected by interviewing Small Scale industrialists and Micro Businessmen using questionnaire (Appendix) in NewDelhi (Kamla Nagar, Malkaganj, Pulbangash and Dilli Haat) during last week of September andthefirst week of October 2018. A dice game was also designed and played with the respondents. The responses recorded on the Likert Scale were analysed using percentage calculation and frequency distribution was used for analysis of open-ended questions.

Findings: Analysis of the data revealed that respondents were affected by past experiences of business uncertainty, price risk and demand risk (from least to most). Past experience of uncertainty affected 60 % of the respondents; analysis of responses did not reveal the reason for being affected by business uncertainty. 68% of the respondents were affected by price risk; 82.35% of them cited the inability to cover their cost of production as the main reason that leads them to consider past price risk while making decisions. 80% of the respondents were affected by demand risk; 90% of them considered the past experience of demand risk as a means of identifying changing demand pattern of the consumer as a result considered it while making decisions. Results of the dice game revealed that if respondents made a profit in a risky situation in the past then 90% of them would carry forward the same strategy in future. If it leads to loss; 66.66% of them would look for a different strategy and if it resulted inno profit no loss; 84.4% of them would carry forward the same strategy.

Application/Improvements: There is a lack of study that attempts to find out the factors affecting decision making by producers in India. This study can be useful to find out the rational and irrational factors affecting decision making by producers under risk and uncertainty.

Keywords: Small Scale Industries, Micro Business, Decision Making, Risk and Uncertainty.

1. Introduction

1.1. Small Scale Industries (SSI) and Micro Businesses

The MSMED Act, 2006 defines the Micro, Small and Medium Enterprises based (i) on the investment in plant and machinery for those engaged in manufacturing or production, processing or preservation of goods and (ii) on the investment in equipment for enterprises engaged in providing or rendering of Services. In other words,Industries which are easy to start and manage due to the small scale of production are regarded as small-scale industries. They are set up to cater to the basic needs of society. Their cost of production remains on the lower side due to the availability of cheap labour as the target market (host community) is small. These firms need little starting and operating raw material and other capital goods.

The classification of the industry as large or small scale depends on the rate of production and the size of the market. An industry with a low rate of production and fewer employees is a small-scale industry. Most governments implement policies that strengthen the small-scale industry sector because of the role that these industries play in economic development. These industries have a fair amount of contribution towards the GDP and also help in increasing employment levels which is shown in Table 1. Firms here realize a small annual turnover and as a result, pay fewer taxes.

Table 1. MSME contribution in GVA and GDP in different years

Year	MSME GVA	Growth (%)	Total GVA	Share ofMSME inGVA (%)	Total GDP	Share of MSME in GDP (%)
(Figures in RsCrores adjusted for FISIM[3] at current prices)
2011-12	2583263	-	8106946	31.86	8736329	29.57
2012-13	2977623	15.27	9202692	32.36	9944013	29.94
2013-14	3343009	12.27	10363153	32.26	11233522	29.76
2014-15	3658196	9.43	11481794	31.86	12445128	29.39
2015-16	3936788	7.62	12458642	31.60	13682035	28.77

Source: CSO, Ministry Of Statisticsand Programme Implementation

The Small Scale Industries (SSI) is the backbone of a developing nation. The ability of Small Scale Industries to provide employment potential at low labour cost coupled with the high labour intensity is fairly helpful in employment generation [1]. The number of Small Scale Industries in India has been continuously rising. According to the Economic Survey of India,the number of small scale industries has increased from 6.787 in 1990-91 million to 32.56 million in 2011-12. At the individual level of plants in the small scale industries, a lot of decisions have to be made. The process of decision making is highly complex. Economist has long tried to understand the decision-makingprocess. All theories of decision making can be categorized either as descriptive or as normative; descriptive perspective identifies decision makers as having limited processing capacity which can lead to making mistakes while making complex judgement and choices; the normative perspective is that decision-makers have unlimited processing capacity that allows them to exhaustively examine all alternatives and then decide the best one [2].

Decision making at times can be completely rational while at other it can be affected by a lot of factors and a decision may be made that is not exactly rational. It is affected by Cognitive Bias [3]. Age and Individual differences also affect the decision-making process [4]. Another study has indicated the role of past experiences in decision making [5]. Since small scale industrialist is prone to uncertainty and risks of the market like every participant, decisions made under uncertainty of price and demand also becomes an important area of study.Demand uncertainty leads to a decline in investment both planned and realized while price uncertainty is insignificant [6]. This result is confirmed by another study as well [7]. Even in situations of risk and uncertainty some sectors in the small scale industry will be making a profit and others will be making a loss. Prospect Theory points out that the risk appetite of human beings would be different under situations involving loss and another situation involving profit [8].

2. Research methodology

2.1. Subjects

The research is conducted by interviewing small scale industrialists and micro businessman in New Delhi and playing a dice game with them. For the purpose of data collection, a questionnaire was prepared. Personal interviews were conducted based on this questionnaire ranging from 30 to 45 minutes on each subject in areasofMalkaganj,KamlaNagar, Pulbangash and Delhi Hatt in New Delhi.Apart from personal interviews, two rounds of self-designed dice games were also played with the subjects in order to obtain the relevant data. The objective was to obtain data from varied sectors of the small scale industries and micro business. The researcher throughout the study had carried the questionnaire in physical (printed) form as well as digital form (which was sent over Whatsapp on spot and questions explained in detail). Depending upon the level of education of the subject and its accessibility to technology suitable form of the printed/digital questionnaire was used.

2.2. Study design

The research Questionnaire which is present in the Appendix consisted of 3 different sections. The first section consisted of questions for description of the subject such as Name, Age, Sex and Sector of Small Scale Industry/Micro Business to which it belonged.

The second section of the questionnaire (Appendix)consisted of six questions out of which three were qualitative questions. These three questions were asked in such a manner that they could be marked on a Likert Scale.When responding to a question having a Likert Scale, the degree of agreement or disagreement is noted down. Respondents' answers in a symmetric agree-disagree scale for a series of statements. The research employs five-level-balanced and symmetric Likert item list which comprises of the following options:

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

Once the respondent had marked his/her answer on the Likert Scale they were asked to provide a reason for their answer or put it simply for each of the three questions that were answered in section 2 of the questionnaire they were asked to answer WHY?

In the third section of the questionnaire, the results of the dice game were noted down. The dice game was as follows:

Each respondent has to make a bet of Rs50. Once the bet was placed he had to assign the following six options:

1. Profit of 20%
2. Profit of 10%
3. No profit No loss
4. No profit No loss
5. Loss of 10%
6. Loss of 20%

To the six different numbers (1, 2, 3, 4, 5, 6) on the dice. Once the respondent had assigned these six possibilities to each of the six numbers the dice were rolled. As a result, the respondent would have faced either profit or loss or no profit no loss. After this, the dice would be rolled again and the respondent would be asked again to assign the six outcomes to the different numbers on the dice.

3. Method of data collection

3.1. Primary data

The data was collected by interviewing Small Scale Industrialists and Micro Businessmen in NewDelhi (Kamla Nagar, Malkaganj, Pulbangash and DilliHaat) during last week of September andthefirst week of October 2018.The Questionnaire and the Dice game was an attempt to find if past experiences of price risk demandriskand business uncertainty affect their decision making.

3.2. Secondary data

Secondary data were collected from government websites of RBI, Ministry of Finance and annual report of MSME for maintaining credibility and authenticity.

3.3. Sample size and method of sampling

Considering the total number of small scale industrialist and micro business in India the study population was very large. Considering the lack of resources and time a total of 27 interviews were taken in New Delhi. 2 out of the 27 interviews could not be completed hence data from 25 respondents were analysed. The method of cluster sampling was used to collect data.

3.4. Analytical tools used

For fulfilment of our objective, the threequalitative questions with three Why question were asked and was analysed by computation of percentage i.e. calculation of the percentage of the respondent who was affected by price risk, demand risk and uncertainty and those who were not affected by the same. The open-ended part of this question was analysed by frequency distribution i.e. counting the number of times each reason was cited and then selecting the reason that was cited a maximum number of times. The data of dice game was analysed by computation of percentage i.e. computing percentage of respondents who played with a same/different strategy in round 2.

4. Analysis of variables and responses

A total of 27 responses were collected out of which 2 were rejected because of incomplete data.Hence the total number of responses considered for analysis was 25.

4.1. Analysis of Variable 1: Small Scale Industrialist or Micro Businessman

An important factor for reliability and completeness of this research was to make sure that the respondents were either Small Scale Industrialist or Micro Businessman. The classification of respondents into these two types are presented in Table 2. Out of the 25 respondents selected 15 of them were engaged in self-production of products hence were classified as small scale industrialist while the other 10 falls into the category of micro business. Although the size of the sample is small but with the detail in which each respondent has been interviewed in the given the time constraint with lack of resources the data collected is enough to cover the objective with which this research was undertaken.

Table 2. Classification of respondents

Respondent Type	Number	Percentage
Small Scale Industrialist	15	60%
Micro Business	10	40%

Source: Compiled from questionnaire survey section-1

4.2. Analysis of Variable 2: Sector of SSI and Type of Micro-Business

For the purpose of this research, it was very important that responses were collected from various sectors of the small scale industries and different types of micro business to have an overall representation of small scale industries and micro business in the data. Having variation in terms of sector of SSI and type of micro business was critical for obtaing authentic result. This variation was a prerequisite for the study to yield results that would be applicable to the heterogeneous nature of small scale industries and micro business in India.Table 3 represnts the type of SSI and Micro Business to which our respondents belonged to.

Table 3. Type of SSI/Micro-Business

SECTOR OF SSI/TYPE OF MICRO BUSINESS	Numbers	Percentage
Furniture Manufacturing (Wooden+ Steel)	4	16%
Seed Manufacturing	2	8%
Food Services	1	4%
Ice Manufacturer	1	4%
Handicrafts	8	32%
Handmade Paintings	2	8%
Brass Manufacturer	1	4%
Textile	4	16%
Fishery	1	4%
Printing Press	1	4%
Total	25	100%

Source: Compiled from questionnaire survey section-1

4.3. Analysis of responses -1: Experience of risk in the past

The objective of the research was to find out whether past experiences of price risk,demandrisk and business uncertainty had any effect on similar future decisions taken by the small scale industrialist and micro business in future. For this purpose, three different qualitative questions along with three Why questions were asked (see section 2 of questionnaire in Appendix). These qualitative questions were marked on a Likert Scale and their reason for marking each of these options was noted down in short sentences. The options were given numerical values so that comparison between different types of risks as possible. For minimum bias, and maximum objectivity, the Scale was given values which were symmetric and equidistant. The following paragraph describes how different Likert Items were numerically marked:

Since all the questions were asked in a positive manner, hence a response of '*Strongly Agree*' meant that the respondent was extremely satisfied with the parameter. Thus, this was given a value of '*5*'. In the same way, '*Strongly Disagree*' would mean that the respondent is extremely dissatisfied with the parameter, so it has been assigned a value of '*1*'.

The numerical values are coincidental with natural numbers, hence go from 1 to 5. Table 4 shows the conversion of each of these options into their numerical counterpart. The calculation of these responses based on their numerical counterpart for Price Risk, Demand Risk and Business Uncertainty is presented in Appendix.

Table 4. Types of responses

Options	Numerical Value
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

Source – Conversion of Likert Scale responses into the numerical counterpart

The maximum score for a question could be
25(Sample Size) * 5(Maximum Numerical Value) = 125
The minimum score for a question could be
25(Sample Size) * 1(Minimum Numerical Value) = 2

1. Price risk

The responses for past experience of price risk affecting decision making that were noted on the Likert Scale is shown in Table 5 and the reasons for past experience of price risk affecting /not affecting decision making is shown in Table 6.

Table 5. Responses of past experience of price risk affecting decision making

Responses	Number of
Strongly Agree	8
Agree	9
Neutral	2
Disagree	0
Strongly Disagree	6

Source: Compiled from questionnaire survey section-2

Table 6. Reasons for past experience of price risk affecting/not affecting decision making

Respondent	Non-coverage of production cost(AFFECTS)	Fixed price for the product(DOESN'T AFFECT)	Price fluctuation part of the business cycle(AFFECTS)	Others (NEUTRAL)
1	✓			
2			✓	
3				✓
4	✓			
5		✓		
6	✓			
7	✓			
8	✓			
9				
10		✓		
11				✓
12			✓	
13	✓			
14	✓			
15		✓		
16		✓		
17	✓			
18	✓			
19	✓			

20	✓			
21	✓			
22		✓		
23			✓	
24	✓			
25		✓		
Total	14	6	3	2
Percentage	56%	24%	12%	08%

Source: Compiled from questionnaire survey section-2

2. Demand risk

The responses of past experience of demand risk affecting decision making that were noted on the Likert Scale is shown in Table 7 and the reasons for past experience of demand risk affecting/not affecting decision making is shown in Table 8.

Table 7. Responses of past experience of demand risk affecting decision making

Responses	Number of
Strongly Agree	13
Agree	7
Neutral	0
Disagree	3
Strongly Disagree	2

Source: Compiled from questionnaire survey section-2

Table 8. Reasons for past experience of demand risk affecting/not affecting decision making

Respondent	Shows demand pattern(AFFECTS)	Production on Customer orders(DOESN'T AFFECT)	Seasonal Nature of Demand(DOESN'T AFFECT)	Part of Business Cycle (AFFECTS)
1	✓			
2			✓	
3	✓			
4	✓			
5				✓
6	✓			
7	✓			
8	✓			
9	✓			
10		✓		
11		✓		
12	✓			
13	✓			
14	✓			
15	✓			
16	✓			
17	✓			
18			✓	
19	✓			
20	✓			
21	✓			
22		✓		
23	✓			
24	✓			
25				✓
Total	18	3	2	2
Percentage	72%	12%	8%	8%

Source: Compiled from questionnaire survey section-1

3. Business uncertainty in the market

The responses of past experience of business uncertainty affecting decision making that were noted on the Likert Scale is shown in Table 9 and the reasons for past experience of business uncertainty affecting/not affecting decision making is shown in Table 10.

Table 9. Responses of past experience of business uncertainty affecting decision making

Responses	Number of
Strongly Agree	6
Agree	9
Neutral	3
Disagree	2
Strongly Disagree	5

Source: Compiled from questionnaire survey section-1

Table 10. Reasons for past experience of uncertainty affecting/not affecting future decisions

Respondent	Build Strategy for future (AFFECTS)	Part of Business (AFFECTS)	Failed to give a reason (NEUTRAL)	Others (DOESN'T AFFECT)
1	✓			
2		✓		
3				✓
4	✓			
5				✓
6	✓			
7			✓	
8		✓		
9	✓			
10	✓			
11		✓		
12	✓			
13				✓
14			✓	
15	✓			
16			✓	
17	✓			
18		✓		
19	✓			
20	✓			
21				✓
22				✓
23	✓			
24				✓
25				✓
Total	11	4	3	7
Percentage	44%	16%	12%	28%

Source: Compiled from questionnaire survey section-1

After analysis of the responses, one finds out that all three different experiences of risk in the past affect the future decisions made by small scale industrialist and micro business. However, the extent to which they affect the future decisions are different and are in the following order (from least to most).

1. Past Experience of UNCERTAINTY
2. Past Experience of PRICE RISK
3. Past Experience of DEMAND RISK

4. Analysis of Response 2: Dice Game

The dice game was designed to understand how facing profit/loss/no profit no loss situations in the past i.e. after 1st round of rolling the dice affected their decision making i.e. when the respondents had to allocate numbers for the 2nd throw of dice.The outcome of Round 1 of the dice game and the decisions made by respondents for rounf 2 is presented in Table 11.

Table 11. Analysis of dice game

Resultof Round 1	Number of Outcomes	Same strategy for round -2	Changed Strategy for round -2
PROFIT	10	9 (90.00%)	1 (10.00%)
LOSS	9	3 (33.33%)	6 (66.66%)
NO PROFIT/NO LOSS	6	5 (83.33%)	1 (16.66%)

Source: Compiled from questionnaire survey section-3

The analysis of responses of dice game helped in better understanding of the behaviour of the respondent in understanding their behaviour of how past experiences affect their decision making.

The dice game revealed the following about decision making of respondents

1. When the past experience of risk results in profit then respondents tend to make similar decisions and carry forward the same business strategy in future.
2. When the past experience of risk results in loss then respondents tend to change their decisions and business strategy in future.
3. When the past experience of risk results in no profit/ no loss then respondents tend to make similar decisions and carry forward the same business strategy in future.

5. Results and Discussion

The analysis of our responses reveals that small scale industrialist and micro business are affected by the past experience of risk.However, the degree to which they get affected by the three different types of risk varies. Demand Risk, Price Risk and finally Uncertainty seems to affect them from most to least. This result of our beers similarity as well as differences with [6] who found out that demand uncertainty leads to a decline in investment both planned and realized while price uncertainty is insignificant. While our result of demand risk affecting the decision making of respondents is consistent with [6] demand uncertainty leading to decline in planned and realized investment as only those who take into consideration past experience would alter their future decisions of investment. The second part of our findings is not consistent with [6] as price risk seems to affect our respondents whereas according to them it is insignificant.

The dice game results also showed that whether respondents faced profit or loss they would take into consideration their past while making a similar decision in future.This result is consistent with [5] who have indicated towards the role of past experiences in decision making.

After conducting this research and analysing the data, the following results have been found out:

1. Past experiences of price risk affect 68% of the respondents while making future decisions. 24% of them remain unaffected while the remaining 8% are neutral.
2. 82.35% are unable to cover their cost of production and hence are affected by past experiences of price risk. 17.65% feel that it is a part of the business cycle and find changing strategies to be mandatory. Those who remain unaffected (all 100%) face a fixed price for their products.
3. Past experiences of demand risk strongly affect the future decisions of respondents'.Demand risk in the past seems to affect the future decisions of as much as 80% of the respondents. The remaining 20% of the respondents were unaffected by Demand Risk.
4. 90% of those affected identify the changing demand patterns of the consumers as the main reason while the remaining 10% consider demand risk to be a part of the business cycle.
5. 60% are unaffected as the produce commodities on consumer's demand which eliminates demand risk while the rest 40% face seasonal nature of Demand.
6. 60% of the respondents are affected by past uncertainties while 28% of them are not and the rest 12% remain neutral.

7. 73.34% of those frame their future strategies based on past uncertainties while 26.66% consider it to be a part of the business cycle. Those unaffected by the uncertainty of the past had varied reasons.

8. Results of the dice game revealed that if respondents made a profit in the risky situation then 90% of them would carry forward the same strategy in future. They gave the reason that it helps them build confidence in their strategy and moreover they were sceptic about changing strategy that had to lead them to profit.

9. Results of the dice game revealed that if respondents suffered a loss in the risky situation then 66.66% of them would look for a different strategy. Their primary reason being a lack of confidence in strategy that resulted in a loss for them.However, 33.33% of them would still carry forward the same strategy because they had enough faith in their strategy to yield better results in future.

10. Results of the dice game revealed that if respondents did not make any profit nor did he face any loss then 84.4% of them would carry forward the same strategy while 16.6% would adopt a different one. The reason for the same strategy was they wanted to give some time and see how this strategy unfolds in future while for those who changed it the common reason pointed out by them was profit was their ultimate motive and they have to adapt quickly.

6. Appendix

1. Calculations

Price Risk – The calculation of responses of past experience of price risk affecting decision making that were noted in the questionnaire using Likert Scale is shown in Table 12. The calculations are based on on the numerical conversion of Likert Scale responses in Table 4.

Table 12. Calculation of price risk responses

Responses(A)	Numerical Value(B)	Number of Responses(C)	Score(B*C)
Strongly Agree	5	8	40
Agree	4	9	36
Neutral	3	2	06
Disagree	2	0	00
Strongly Disagree	1	6	06
TOTAL		25	88

Source: Computed using questionnaire survey section 2 based on Table 4

Demand Risk – The calculation of responses of past experience of demand risk affecting decision making that were noted in the questioannire using Likert Scale is shown in Table 13. The calculations are based on the numerical conversion of Likert Scale responses in Table 4.

Table 13. Calculation of demand risk responses

Responses(A)	Numerical Value(B)	Number of Responses(C)	Score(B*C)
Strongly Agree	5	13	65
Agree	4	7	28
Neutral	3	0	00
Disagree	2	3	06
Strongly Disagree	1	2	02
TOTAL		25	101

Source: Computed using questionnaire survey section 2 based on Table 4

Business Uncertainty – The calculation of responses of past experience of business uncertainty affecting decision making that were noted in the questioannire using Likert Scale is shown in Table 14. The calculations are based on the numerical conversion of Likert Scale responses in Table 4.

Table 14. Calculation of business uncertainty responses

Responses(A)	Numerical Value(B)	Number of Responses(C)	Score(B*C)
Strongly Agree	5	6	30
Agree	4	9	36
Neutral	3	3	09
Disagree	2	2	04
Strongly Disagree	1	5	05
TOTAL		25	84

Source: Computed using questionnaire survey section 2 based on Table 4
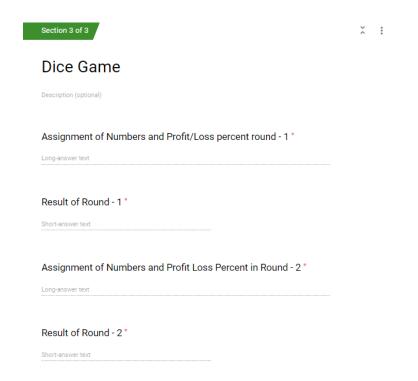
2. Questionnaire

1. Section- 1

Questionnaire For Research

Small Scale Industries and Micro Business

Name *

Short-answer text

Contact Number *

Short-answer text

Age *

Long-answer text

Sector of Small Scale Industry *

Long-answer text

2. Section- 2

Past experience of price risk for the products that I sell, affect my future production decisions *

○ Highly Agree

○ Agree

○ Neutral

○ Disagree

○ Highly Disagree

Reason for the last answer *

Short-answer text

Past experiences of demand risk for the products that I sell ,affect my future production decision *

○ Highly Disagree

○ Disagree

○ Neutral

○ Agree

○ Highly Agree

Reason for the last answer *

Short-answer text

Faced with uncertain profit/ loss situation in future ,I base my decision based on past experiences

○ Highly Disagree

○ Disagree

○ Neutral

○ Agree

○ Highly Agree

Reason for the last answer *

Short-answer text

3. Section – 3

Section 3 of 3

Dice Game

Description (optional)

Assignment of Numbers and Profit/Loss percent round - 1 *

Long-answer text

Result of Round - 1 *

Short-answer text

Assignment of Numbers and Profit Loss Percent in Round - 2 *

Long-answer text

Result of Round - 2 *

Short-answer text

7. Conclusion

This study completes its objective of finding out past effect of past experiences of price risk, demand risk and business uncertainty on decisions made by Small Scale Industrialist and Micro Businessman. Based on the analysis of data collected from the questionnaire the study finds out that past experience of business uncertainty, price risk and demand risk affects the decision making by Small Scale Industrialist and Micro Businessman under conditions of risk and uncertainty. The degree to which they affect their decision is different with business uncertainty affecting least to demand risk affecting most.The reason for being affected by business uncertainty could not be established because of the high variability in responses.However, the main reason for being affected by price risk was the inability to cover production cost and the reason for being affected by demand risk was that it showed the changing demand pattern of the consumer.

The study also finds out through analysis of the uniquely designed dice game that if decisions made under the situation of risk lead to profit then respondents would take the same decision under a similar situation in future whereas if the decision resulted in loss respondents would change their decision. Also, for decisions resulting in no profit, no loss respondents were more likely to make similar decisions in the future.

8. Acknowledgement

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