Factors Influencing the Consumers' Perceptions towards Frozen and Ready-to-Cook Food Products in Bangladesh

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Abstract

Recently in Bangladesh, frozen and ready-to-cook food industry is growing very fast due to high demand of these products by the city dwellers. This study aims at identifying the factors influencing the consumers' perception about the frozen and ready-to-cook food products on Bangladeshi people. A survey was conducted among 211 frozen and ready-to-cook food consumers of Dhaka city with a structured questionnaire. Both descriptive and inferential statistics were used to analyze the data. Factor analysis was conducted to identify the influencing factors related to the consumers' perception about frozen and ready-to-cook food products. Regression analysis was accomplished to examine the impact of the factors on the overall consumers' preferences of the processed frozen and ready-to-cook food products. Results show that the factors which influence the perception of the consumers about frozen and ready-to-cook food products are concerned with saving time, helpful and economic, low price, variety and good for health, brand image and quality, availability of the frozen foods, taste of the food, and attractive packaging of the food. Individual factor relationships show that the factors such as, saving time, the foods are helpful and economic, low price, variety and good for health, brand image and quality, and availability of the foods are significant and the factors such as, good taste of the food and attractive packaging of the food are not significant in the this study. This study suggests that the policymakers of the processed frozen and ready-to-cook food product manufacturers should give importance on these factors for increasing the demand of the products among the city dwellers of Bangladesh.

Keywords: Consumers' perception about fish, Meat and wheat-based frozen foods, Life style and taste preferences, Income of the people, Availability of the products, Easy to cook.

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1. Background

Frozen food and ready-to-cook food market is expanding very fast among the city dwellers of Bangladesh. Frozen and ready-to-cook food products are mainly related to fruits and vegetables, fish and meat-based products, wheat-based food products, and snacks products. Frozen fruits and vegetables related products are different fruits, Bean Seeds, Kakrol, Patol, Ladies Finger, Jack Fruit Seeds, etc. while snacks foods include both meat and fish based snacks like chicken nuggets, meat ball, strips, fish ball, fish cakes and vegetable based snacks like Aloo Puri, Dal Puri, Samosa, Shingara and Spring Roll (Arifeen, 2012). Frozen Ready to Cook Meat products include frosted whole chickens, lambs, mutton and beef. These are currently available at super markets and order based by institutional buyers like restaurants and fast food shops and fish products are Hilsha, Koi, Pabda, Keski, Mola, Foli, Baila, Batashi and Ayer.

A rapidly growing consumer market is observed in Bangladesh in recent years. It is perceived that this growth is due to a large population base that has increased demand for food products in Bangladesh (Ferdous, & Hossain, 2015). The market and the product range have evolved significantly over the last decade and many companies have entered the food business. Frozen food and ready-to-cook foods market is also increasing in Bangladesh very fast. According to some industry analysts, the food processing sector in Bangladesh is a 4.5 billion US Dollar industry. In 2010, Bangladesh exported over \$700 million worth of processed food and beverages, over 60 percent of them were shrimp and fish products¹.

The completion among the manufacturers in this sector is also severe. Golden Harvest and Rich have a high assortment of products and are the largest players in food products market in Bangladesh. However Aftab, BRAC and CP are also big players in the processed chicken market of the country. Kazi has recently entered into the market and is trying to grab some market share very fast. This sector is a promising sector of Bangladesh as the per capita income, family structure (nuclear), taste and fashion are changing in the country¹ (Figure 1). However, there is still some misconception about the frozen food and ready-to-cook foods in Bangladesh. Saying goes that frozen foods are not very good for health and it has low nutrition value. Hence, this study aims to identify the consumers' perception about the frozen food and ready-to-cook food products like fruits and vegetables, fish, meat and wheat-based frozen food products in Bangladesh.

¹ Any thing missing here?

https://www.google.com.bd/search?sxsrf=ACYBGNRp00t0z6Ovri0IECrudH7A4_MD8A%3A1570531429727&lei=ZWicXZ3NK8n6vgTFjr_A

[CQ&q=food%20industry%20in%20bangladesh%202018&ved=2ahUKEwjunKTBvYzIAhVeinAKHRbyA4oQsKwBKAF6BAgAEAI&biw=1224&bih=745](https://www.google.com.bd/search?q=food%20industry%20in%20bangladesh%202018&ved=2ahUKEwjunKTBvYzIAhVeinAKHRbyA4oQsKwBKAF6BAgAEAI&biw=1224&bih=745)

¹ <https://www.lightcastlebd.com/insights/2015/07/14/market-insight-bangladesh-frozen-food-sector>

Figure 1. *Competitive situation of Bangladesh frozen foods market.*

1.1 Objectives of the Study

The main objective of this study is to identify the factors related to the consumers' perception about the frozen food and ready-to-cook food products in Bangladesh. The specific objectives are:

- (i) to identify the factors that influence consumers' perceptions about the frozen food and ready-to-cook food products in Bangladesh;
- (ii) to identify the significant factors which influence the selection of frozen foods in Bangladesh.

2. Literature Review

Processed frozen and ready-to-cook foods are important part of the daily foods of the day to day life of the people. This is also true in a developing country like Bangladesh. In this modern lifestyle, people have very small amount of time to prepare their foods by themselves. According to Becker, food preparation decisions are influenced by the worth of the homemaker's time (Becker 1965; Prochaska and Schrimper 1973). It's vital to think about convenience in the stages or methods of food consumption and to see the proportionate importance customers give to the factors like time, energy use in acquisition, consumption and disposal (Brown and McEnally, 1993). Therefore, convenience is outlined in terms of our time, physical energy and mental effort savings associated with food preparation and consumption. Another analysis shows that customers understand the Ready-made foods (RMFF) as nutrient, healthier and delicious. Therefore, they are switching frozen processed food and willing to pay the premium value. In the paper they investigated to understand the foremost moving factors that have an effect on purchasers to get Ready-made food (Sen, S., Antara, N., & Sen, S. 2019).

Pre-packed, processed meals like boxed entrees and frozen dinners decreases the investment of energy, time, or cookery skills required for food preparation (Capps O, Tedford J, Havlicek J., 1985). However, qualitative analysis findings have found out that older people feel conflicted about pre-packed, processed foods as they knew these foods weren't as nourishing. However, they valued time-saving advantages of frozen processed food. Other qualitative findings recommend that saving time isn't the exclusive reason for buying processed food (Carrigan, Szmigin and Leek, 2006). A comparison is drawn to point that the biggest factor tributary to purchasing behavior in grocery stores was the worth and convenience of frozen

foods that were more popular over ancient types of grocery purchase. Even though the cost of natural food was lower in those neighborhoods, individuals would tend to shop for frozen foods for the benefit of cookery and handling of the product (Aamir, S., & Nawaz, A. 2019).

Income is one of the foremost relevant socio-demographic variables that mostly have an effect on consumers' food decisions, suggesting that the look of interventions geared toward dynamical dietary patterns ought to take into thought the characteristics of specific target populations (Ares, G., Machín, L., Girona, A., Curutchet, M., & Giménez, A. 2019). Suvrastub unit, enclosed some factors in his study that influence consumers to require ready-made food (2019), he mentioned the influencing factors like expeditious, safety, easiness to cook, favorability, price, brand, tasty, advertising, appearance, quality, availableness & packaging.

A.K.M Shakil Mahmud (2018) in his study referred an amount of robust investment in technology, processes and regulation by which the frozen food sector has flourished and earned itself a strong name with mercantilism partners. Exporters have earned quality and trait within the international market and are committed to maintain a competitive advantage in product quality. Another aspect of the processed food product is it's perpetually making an attempt to beat consumers' negative perception concerning the health and well-being of frozen foods. (Sirazum Munira, 2017). Food products provide compelling blessings over raw merchandise, particularly once when it involves organic process price and flavor. Food products additionally lock in vitamins and a natural contemporary style. Price, quality, availableness, taste and freshness are a number of the factors influencing shoppers in consumption of frozen foods. (Mahmudul Hasan, 2019).

Now in a Bangladesh based research of Syed Robayet Ferdous, he showed the prospects and challenges of Bangladesh frozen food (2015). Challenges of Bangladesh frozen food include infrastructure development, currency devaluation, price collapse, application of labor law, finding foreign investors etc. He also mentioned ways to overcome these challenges such as introducing new policy, new exporting destination, self and government monitoring and many more. Consumers' purchase decisions of semi processed frozen food products are significantly affected by five factors such as quality, taste, price, availability, and competitive superiority of the product over other substitute or competitive brands. The study also reveals that the competitive superiority is also a great concern to the customers. (S.M. Monirul Islam 2018)

3. Methodology

This study was conducted to identify the factors related to the consumers' perception about the frozen foods in Bangladesh. Both primary and secondary data were used to conduct this study. Primary data were collected from the different consumers of departmental and retail stores located in Dhaka city. The secondary data were collected from the books, magazines, and journals.

3.1 Sample Design and Determination of Sample Size

In Dhaka city of Bangladesh, there are about 10 million customers who buy frozen foods. Hence, the sample size of this study was determined by using the following formula suggested by Yamane (1967).

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

Where, n is the sample size, N is the population size, and e is the level of precision. For this study, level of precision is presumed as 0.07 and the population size is 10 million. Putting these values in the above equation, the required number of sample size becomes approximately 204. This study interviewed 211 consumers from 10 departmental outlets under study. This figure is well above the critical sample size of 204 for employing multivariate analysis (Hair et al., 1998).

3.2 Questionnaire Design

Through literature review, the questionnaire related to the factors influencing the consumers' perception about the frozen foods was developed. Responses to all the statements in the questionnaire were measured on a five-point scale ranging from 1 to 5 with 1 indicating strongly disagree and 5 indicating strongly agree. The collected data were statistically processed subsequently to come to the useful findings.

3.3 Data Collection & Analysis

Primary data of this study were collected and used for the purpose of identifying the factors which influence the consumers' perception about the frozen foods in Bangladesh. The survey was conducted among the 211 consumers from 10 outlets (Table 1).

Table 1

Distribution of the Respondent Frozen Foods Consumers

S. No.	Name of Departmental Outlet(s)	Number Consumers Interviewed	Percentage	Cumulative Percentage
1.	Agora	23	10.90	10.90
2.	Almas General Stores	18	08.53	19.43
3.	Al-Amin	14	06.65	26.08
4.	Golden Harvest	23	10.90	36.98
5.	H.N.P. Family Mart	14	06.65	43.63
6.	Shopno	27	12.79	56.42
7.	Mina Bazar	16	07.58	64.00
8.	Nahar Departmental Store	20	09.47	73.47
9.	Pick & Pay Supermarket	30	14.21	87.68
10.	Kazi Farms Kitchen	26	12.32	100
Total		211	100.00	

The survey was conducted in 2019. The interviewers were properly trained on the items included in the questionnaire for data collection before commencing the interview. Along

with descriptive statistics¹, inferential statistical² techniques such as, Factor Analysis and Multiple Regression Analysis were used to analyze the data. A Principal Component Analysis (PCA) with an Orthogonal Rotation (Varimax)³ using the SPSS (Statistical Package for Social Sciences) was performed on the survey data. Multiple Regression Analysis⁴ such as, Multiple Regression was conducted by using SPSS to identify the relationships between the dependent and independent variables and the significant factors.

4. Analysis and Interpretations

In the analysis part, descriptive and inferential statistics were used. Multivariate analysis like factor analysis and multiple regression analysis were performed to identify the factors and the relationships between the overall consumers' perceptions and the factors that influence the perception of the frozen foods consumers in Bangladesh. This study covered the factors influencing the perceptions of the frozen foods consumers in Dhaka city.

4.1 Respondents Profiles

Table 2 shows that 46.20% of the respondents were male and 53.80% respondents were female consumers of frozen foods.

Table 2

Gender Distribution of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	97	46.0	46.2	46.2
	Female	113	53.6	53.8	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Age distribution of the sample respondents shows that 88.10% respondents were at the age of 18-24 years followed by 6.20% at the age of 25-30 years, 1.40% at the age of 31-37 years, and 4.30% at the age of above 38 years (Table 3).

- 1 Descriptive statistics includes statistical procedures that we use to describe the population we are studying. The data could be collected from either a sample or a population, but used to describe the group that is being studying. That is, the results cannot be generalized to any larger group. The results help us organize and describe data. Descriptive statistics can only be
- 2 Inferential statistics is concerned with making predictions or inferences about a population from observations and analyses of a sample. That is, we can take the results of an analysis using a sample and can generalize it to the larger population that the sample represents.
- 3 Varimax rotation is an orthogonal rotation of the factor axes to maximize the variance of the squared loadings of a factor (column) on all the variables (rows) in a factor matrix, which has the effect of differentiating the original variables by extracted factor. Each factor will tend to have either large or small loadings of any particular variable. A varimax solution yields results which make it as easy as possible to identify each variable with a single factor. This is the most common rotation option.
- 4 In statistics, regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'Criterion Variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Table 3*Age Distribution of the Respondents*

	Age of the Respondents	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	185	87.7	88.1	88.1
	25-30	13	6.2	6.2	94.3
	31-37	3	1.4	1.4	95.7
	Above 38	9	4.3	4.3	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Table 4 shows that most of the respondents (73.80) have honors degree who prefer to go departmental stores.

Table 4*Education Level of the Respondents*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HSC/A levels	36	17.1	17.1	17.1
	Honors	155	73.5	73.8	91.0
	Masters	13	6.2	6.2	97.1
	Others	6	2.8	2.9	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Ninety one point nine percent of the respondents were unmarried and 8.10% were married (Table 5).

Table 5*Marital Status of the Respondents*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unmarried	193	91.5	91.9	91.9
	Married	17	8.1	8.1	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Most of the consumers (85.60%) of frozen foods were housewives (Table 6).

Table 6*Occupations of the Respondents*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private Job	13	6.2	6.2	6.2
	Government Job	1	.5	.5	6.7
	Entrepreneur	6	2.8	2.9	9.6
	Housewife	179	84.8	85.6	95.2
	Others	10	4.7	4.8	100.0
	Total	209	99.1	100.0	
Missing	System	2	.9		
Total		211	100.0		

4.2 Buying Habits and Experiences of the Respondents

This study show that most of the consumers (36.20%) buy frozen food every month followed by often (31%), Never (19.50%), once in a week (11.40%) and daily (1.90%) (Table 7).

Table 7*Buying Patterns of the Respondents*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	4	1.9	1.9	1.9
	Often	65	30.8	31.0	32.9
	Once in a week	24	11.4	11.4	44.3
	Every Month	76	36.0	36.2	80.5
	Never	41	19.4	19.5	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Most of the respondents (83.80%) have previous experience to buy frozen foods from the departmental stores (Table 8).

Table 8*Previous Experience of Buying*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	176	83.4	83.8	83.8
	No	34	16.1	16.2	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

Most of the respondents (32.90%) would like to buy frozen ready meals followed by Frozen Meat and Poultry (18.10%), Milk & Milk Products (12.90%), Frozen Desserts (11.40%) etc. (Table 9).

Table 9*Preference to Buy Frozen Foods*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Frozen Fruits and Vegetables	11	5.2	5.2	5.2
	Frozen Meat and Poultry	38	18.0	18.1	23.3
	Frozen Fish	6	2.8	2.9	26.2
	Frozen Bakery Item	16	7.6	7.6	33.8
	Frozen Seafood	11	5.2	5.2	39.0
	Frozen Desserts	24	11.4	11.4	50.5
	Frozen Ready Meals	69	32.7	32.9	83.3
	Milk & Milk Products	27	12.8	12.9	96.2
	Others	8	3.8	3.8	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

The highest number of respondents (34.30%) would like to buy frozen foods as natural food followed by positive (29.50%), moderate positive (22.90%), very positive (9%), and negative 4.30%) (Table 10).

Table 10*Perception towards Frozen Food*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	9	4.3	4.3	4.3
	Neutral	72	34.1	34.3	38.6
	Positive	62	29.4	29.5	68.1
	Moderate Positive	48	22.7	22.9	91.0
	Very Positive	19	9.0	9.0	100.0
	Total	210	99.5	100.0	
Missing	System	1	.5		
Total		211	100.0		

4.3 Results of Factor Analysis

The results of factor analysis show that all the variables concerning the consumer perception about the frozen foods have high communalities indicating the variables are important in this study (Table 11).

Table 11*Communalities of the Variables*

Variables	Extraction
1. I am a regular buyer of processed food	.903
2. Frozen food saves time.	.825
3. Frozen food is as nutritious as fresh food.	.863
4. Those who buy frozen food are not wasting money.	.875
5. Frozen food products are helpful for students/working women.	.795
6. Frozen food is economic in use.	.930
7. Frozen food is a convenient food product.	.981
8. Frozen food has a long shelf life than fresh food.	.932
9. The quality of frozen food is as good as fresh food.	.933
10. Price of frozen food is relatively low	.893
11. Packaging of frozen food is attractive	.944
12. Advertisement attracts me to buy frozen food	.981
13. Variety of the frozen food is available	.777
14. It is good for health	.739
15. Frozen food is safe for me	.692
16. Frozen food is easy to cook	.687
17. Brand image of the product is good	.747
18. Quality of the frozen food is good	.930
19. Price of the frozen food is low	.981
20. The frozen food's availability	.932
21. Taste of the frozen food is good	.933
22. I believe in quality information printed on product package for frozen goods	.893
23. High price always ensures high quality of the food	.944
24. Packaging is very important to attract consumer in frozen food	.981

Extraction Method: Principal Component Analysis.

This study identified eight factors related to the consumers' perception about the frozen foods in Bangladesh. This eight together explained 87.87% of the variance of the data set. The factors are: frozen foods save time, frozen foods are helpful and economic, low price and good packaging, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food (Table 12).

Table 12*Total Variance Explained*

Component / Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1. Frozen Food Saves Time	5.263	21.929	21.929
2. Frozen Foods are Helpful and Economic	3.732	15.551	37.480

3. Low Price and Good Packaging	3.053	12.721	50.201
4. Variety and Good for Health	2.546	10.607	60.808
5. Brand Image and Quality	2.386	9.941	70.748
6. Availability of the Food	1.665	6.937	77.685
7. Good Taste of the Food	1.415	5.898	83.583
8. Attractive Packaging of the Food	1.030	4.291	87.874

Extraction Method: Principal Component Analysis.

Table 13 shows the factor loadings of the variables constituted eight factors are very high. It shows that the factor loadings of all the variables are high indicating that the variables constituted the factor(s) have higher level of relationships with them.

Table 13

Rotated Component Matrix^a

Variables	Component							
	1	2	3	4	5	6	7	8
Factor 1 Frozen Food Saves Time								
I am a regular buyer of processed food	.939							
Frozen food saves time.	.939							
Factor 2 Frozen Foods are Helpful and Economic								
Frozen food products are helpful for students / working women.		.919						
Frozen food is economic in use.		.919						
Frozen food is a convenient food product.		.643						
Frozen food has a long shelf life than fresh food.		.641						
The quality of frozen food is as good as fresh food.		.558						
Frozen food is easy to cook		.719						
Factor 3 Low Price and Good Packaging								
Price of frozen food is relatively low			.951					
Packaging of frozen food is attractive			.951					
Advertisement attracts me to buy frozen food			.643					
Factor 4 Variety and Good for Health								
Variety of the frozen food is available				.743				
It is good for health				.743				
Frozen food is safe for me				.742				
Frozen food is as nutritious as fresh food.				.666				
Factor 5 Brand Image and Quality								
Brand image of the product is good					.943			
Quality of the frozen food is good					.943			

High price always ensures high quality of the food	.685
Factor 6 Availability of the Food	
The frozen food is available	.984
Factor 7 Good Taste of the Food	
Taste of the frozen food is good	.964
Factor 8 Attractive Packaging of the Food	
Packaging is very important to attract consumer in frozen food	.545
I believe in quality information printed on product package for frozen goods	.964

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

4.4 Results of Multiple Regression Analysis

Model summary shows that the R square value of the model is 0.531 (Table 14).

Table 14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.729 ^a	.531	.512	.364

- a. **Predictors:** (Constant), REGR factor score 8 for analysis 2, REGR factor score 7 for analysis 2, REGR factor score 6 for analysis 2, REGR factor score 5 for analysis 2, REGR factor score 4 for analysis 2, REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2 ANOVA shows that the factors together are significant as manpower planning techniques (Table 15).

Table 15

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.238	8	3.780	28.586	.000 ^b
	Residual	26.710	202	.132		
	Total	56.948	210			

- a. **Predictors:** (Constant), REGR factor score 8 for analysis 2, REGR factor score 7 for analysis 2, REGR factor score 6 for analysis 2, REGR factor score 5 for analysis 2, REGR factor score 4 for analysis 2, REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2
- b. **Dependent Variable:** Considering all the factors mentioned above, Frozen foods are helpful.

This study identified eight factors related to the perception of the consumers regarding frozen foods in Bangladesh such as, frozen food saves time, frozen foods are helpful and economic, low price and good packaging, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food. Individual factor relationships show that the factor such as frozen food saves time, frozen foods are helpful and economic, low price and good packaging, variety and good for health, brand image and quality, and availability of the food are significant and factors named good taste of the food and attractive packaging of the food are not significant in the this study (Table 16).

Table 16*Significance Test*

Model/Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.408	.025		176.069	.000
1. Frozen Food Saves Time	.139	.025	.267	5.534	.000
2. Frozen Foods are Helpful and Economic	.177	.025	.339	7.040	.000
3. Low Price and Good Packaging	.110	.025	.212	4.390	.000
4. Variety and Good for Health	.075	.025	.143	2.969	.003
5. Brand Image and Quality	.237	.025	.455	9.447	.000
6. Availability of the Food	.136	.025	.260	5.402	.000
7. Good Taste of the Food	.035	.025	.066	1.379	.170
8. Attractive Packaging of the Food	.007	.025	.013	.277	.782

a. Dependent Variable: Considering all the factors mentioned above, Frozen foods are helpful.

5. Conclusions and Recommendations

This study has been performed to identify the factors influencing the frozen and ready-to-cook foods consumers' perception in Dhaka city. It identified eight factors related to the perception of the consumers regarding frozen and ready-to-cook foods in Bangladesh. The factors are: frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food. Individual factor relationships show that the factor such as frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, and availability of the food are significant. This means if there is a change in this area of the frozen foods there will be perceptual change in the consumers of Bangladesh. The factors such as, good taste of the food and attractive packaging of the frozen foods are not significant in this study. However, there is an ample scope to conduct further study on the factors that influence the perception of the frozen and ready-to-cook foods consumers in Dhaka city of Bangladesh by taking more samples in account which may lead to better results in this sector of industry.

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Firm Specific Attributes and Stock Returns: A Case of Nepalese Insurance Companies

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Abstract

This paper empirically evaluates the explanatory power of the firm specific attributes such as size [Ln(ME)], book-to-market equity [Ln(BE/ME)], and net worth per share [Ln(NWPS)], on stock return (R_j) of Nepalese insurance companies listed in Nepal Stock Exchange (NEPSE). The study covers the period of 2000/01 to 2017/18 with 12 insurance companies out of 22 listed insurance companies in NEPSE (Mid-July, 2018). The empirical analysis of this study concludes that, size [Ln(ME)], book-to-market equity [Ln(BE/ME)] and net worth per share [Ln(NWPS)] have explanatory power to explain the cross-section of stock return of Nepalese insurance companies. Among these variables book-to-market equity [Ln(BE/ME)] has strong explanatory power than other variables.

Keywords: Firm specific attributes, Insurance companies, Stock return, Nepal stock exchange, explanatory power.

1. Introduction

Stock return is the one of the major factor for making investment decision in financial sector. So many models, theories and empirical evidences concluded that stock return is affected by various factors such as the single factor beta (β) the systematic risk, unidentified risk factors such as interest rate, inflation rate, and firm specific variables such as size of the firm, the ratio of book equity to market equity, earnings yield, cash flow yield, dividend yield etc.

Sharpe (1964), Lintner (1965) and Mossin (1966) introduced the capital asset pricing model (CAPM). CAPM asserts that the expected returns on securities are positive linear function of their market betas (β s), the systematic risk and market β s are sufficient to describe the cross-section of expected return. Similarly, Ross (1976) formulated Arbitrage Pricing Theory (APT). According to Ross, expected return of an asset depends on various unidentified risk factors such as interest rate, inflation rate and so on.

In the context of developed capital market Banz (1981) concluded that market equity, ME (a stock's price times shares outstanding), adds to the explanation of the cross-section of average returns provided by market β s, Bhandari (1988) found that leverage is important for explaining expected return, Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) concluded that average returns are positively related to the ratio of a firm's book value of common equity, BE, to its market value, ME, Basu (1983) showed that earnings-price ratios

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(E/P) help to explain the cross section of average returns. Furthermore, Barbee, Mukherji, and Raines (1996) concluded that sales price ratio and debt equity ratio had greater explanatory power for stock return than book to market ratio and size of the firm.

Similarly, in a comprehensive study by Fama and French (1992), the book-to-market value of equity ratio (BE/ME) and firm size, measured by the market value of equity (ME), emerged as the variables that have the strongest relations with the cross-section of average stock returns during the 1963-90 period. Fama and French also showed that the BE/ME consistently has the greatest power for explaining stock returns. In addition, they have found that a stock's beta does not have significant explanatory power and that the combination of the BE/ME and ME absorbs the roles of leverage and the earnings-price ratio in explaining stock returns.

Moreover, in the context of emerging capital market Aveh and Vitor (2017) had conducted a study using the data of listed company of Ghana stock exchange for the period of 2008 to 2014. The study of Aveh and Victor concluded that accounting information, specifically earning per share, return on equity, book value and market capitalization of the firms, is relevant for explaining stock prices. To determine the explanatory power of firm specific variables on stock price in Indian context, Sharma (2011) had conducted a study. The study of Sharma concluded that earning per share, dividend per share and book value per share has significant impact on the market price of share.

In the context of Nepalese capital market Pradhan (1993) has conducted the study on "small market behavior in a small capital market: a case of Nepal". Pradhan examined the relationship of market equity, market-to-book equity ratio, price-earnings ratio, and dividends with liquidity, leverage, profitability, assets turnover, and interest coverage. The study of Pradhan concluded that larger stocks have larger price earnings ratio, larger book-to-market equity ratio, lower liquidity, lower profitability, and smaller dividend. However, price earnings ratios and dividend ratios are more variable for smaller stocks whereas market value to book value of equity is more variable for larger stocks.

Shrestha (2011) conducted a study to observe the relationship between company attributes and common stock returns of the Nepalese stock market. Shrestha concluded that size (ME) has significant positive impact on stock return and book-to-market equity (BE/ME) has significant negative impact on stock return. Whereas the ratio of sales per share to stock price (S/P ratio) showed the negative and statistically significant coefficient in regression analysis.

Finally, Bhattarai (2018) has analyzed the effect of firm specific variables and macroeconomic variables on stock price of Nepalese commercial banks and insurance companies. Using the data of seven commercial banks and six insurance companies for the period of 2009/10 to 2014/15, Bhattarai concluded that the major firm specific variables that affect share price are ROE, ROA, EPS, DPS, P/E Ratio, size and major macroeconomic variables that affect share price are MS, GDPR, ER and IR in Nepalese context.

1.1 Rationale of the study

The insurance industry is a fastest growing industry of Nepal. Since the liberalization of 1990, the government has taken a number of initiations in the area of financial sector reforms including insurance. The first insurance company of Nepal is "Nepal Insurance and Transport Company Ltd" (now named Nepal Insurance Co. Ltd since 1991) which was established in

1947 Nepal Bank Limited (the first commercial Bank) (www.nepalinsurance.com.np). There are 22 insurance companies are listed in Nepal stock exchange till Mid-July 2018 out of them, one life insurance company (Rastriya Beema Sansthan) is life/ non-life, 7 companies are life insurance and 14 companies are non-life insurance companies. Insurance Board is an apex regulatory body of insurance companies in Nepal. Under the provisions of insurance Act and Regulation, Insurance Board has adopted the policy of facilitating the insurance companies to invest in the priority sectors.

The stocks of Nepalese insurance companies are preferred by majority of Nepalese investors. Thus, the stocks of Nepalese insurance companies are trading frequently in Nepal Stock Exchange. The market capitalization of insurance companies in mid-July 2018 was Rs 223921.77 million out of the total market capitalization of NEPSE Rs 1435137.67 millions which is 15.60 percent of total market capitalization and it is the 2nd largest market capitalization of NEPSE. Therefore, it is important to explore how different firm specific fundamental variables explain the stock returns of Nepalese insurance companies. Since, the main aim of this study is to evaluate the explanatory power of firm specific attributes on stock return of Nepalese insurance companies; this study does not consider all the firm specific attributes.

1.2 Objective of the study

The main objective of this study is to evaluate the explanatory power of firm specific attributes for explaining the stock return of Nepalese insurance companies. The other specific objectives are as follows:

- To identify the relationship between firm specific attributes and stock returns of Nepalese insurance companies.
- To analyze the explanatory power of firm specific attributes for explaining stock return of Nepalese insurance companies.
- To identify which firm specific variable has strong explanatory power for explaining stock return of Nepalese insurance companies.

1.3 Research Questions

In this study some firm specific fundamental variables such as size (ME), book-to-market equity (BE/ME), and net worth per share (NWPS) are taken as independent variable and stock return of Nepalese insurance companies are taken as dependent variable. Thus, this study deals with the following research questions:

- What kind of relationship exists between firm specific attributes and stock returns?
- Is there any explanatory power of firm specific attributes for explaining stock return of Nepalese Insurance Companies bank?
- Which firm specific attributes has most significant influence on stock return of Nepalese Insurance Companies?

This paper empirically investigates the explanatory power of firm specific attributes on stock returns of Nepalese insurance companies. The rest of the paper is organized as follows: *Section 2* describes the nature and sources of data. Method of analysis is discussed in *Section 3*. Similarly, variables and measures are described in *Section 4*. Furthermore, *Section 5* includes presentation and analysis of data. Finally, summary and conclusion are presented in *Section 6*.

2. Nature and Sources of Data

This study is solely based on the secondary source of data. The required data for the study are obtained from Nepal Stock Exchange (NEPSE), published annual reports of sample firms, Security Board of Nepal (SEBON) etc. There are 196 Nepalese enterprises listed in the NEPSE Ltd. by mid-July 2018, out of them there are 22 Insurance companies are listed. Out of 22 listed insurance companies, one life insurance company (Rastriya Beema Sansthan) is life/ non-life, 7 companies are life insurance and 14 companies are non-life insurance companies are listed which is regarded as the size of the population for this study. The sample has been selected from those 22 insurance companies which are listed by mid-July 2018. Out of 22 insurance companies 12 insurance companies (5 life insurance companies and 7 non-life insurance companies) has been selected as sample on the availability of the data. So, this study is confined to 12 insurance companies which represent 55 percentage of the population. The list of sample insurance companies are presented in appendix-I.

3. Method of Analysis

The basic objective of this study is to observe effect of firm specific fundamental variables on stock returns of Nepalese insurance companies. This study has adopted descriptive analysis correlation analysis and cross-sectional regression analysis. In descriptive analysis the characteristics of the variables under the study has been described. Similarly, to analyze the relationship between firm attributes and stock return of Nepalese insurance companies correlation analysis has been used. In the correlation analysis section, the correlations between the factors under study and stock returns are computed. In correlation analysis the correlation coefficients are calculated for the aggregate cross-sectional data on firm specific variables size [Ln(ME)], book-to-market equity [Ln(BE/ME)], net worth per share [Ln(NWPS)], and stock return (R_j). To calculate the Correlation coefficient between two variables is computed using equation 1.

$$r_{ij} = \frac{\text{Cov}_{ij}}{\sigma_i \sigma_j} \quad (1)$$

Where, r_{ij} is the correlation coefficient between two variables i and j , Cov_{ij} is the covariance between two variables σ_i and σ_j are the standard deviation of variable i and j .

Similarly, this study has adopted multivariate regression analysis to evaluate the explanatory power of firm attributes on stock return of Nepalese insurance companies. In an attempt to analyze explanatory power of firm attributes on stock return of Nepalese insurance companies, the study has performed regression of stock returns on each of the firm specific attributes in aggregate level, for life Insurance company only and for none-life insurance company only through multivariate regression analysis.

The basic model of multivariate regression analysis is specified in equation (2).

$$R_{it} = \alpha_0 + \alpha_1 \ln(ME)_{it} + \alpha_2 \ln(BE/ME)_{it} + \alpha_3 \ln(NWPS)_{it} + \varepsilon_{it} \quad (2)$$

Where,

- R_{it} = the rate of returns of the stock of *i insurance company* for time *t*,
 α_i = the coefficient of fundamental variable to be estimated,
 $\ln(ME)_{it}$ = the log of the equity market capitalization of stock of *i insurance company* for time *t*,
 $\ln BE/ME_{it}$ = the log the book-to-market equity ratio of stock of *i insurance company* for time *t*,
 $\ln(NWPS)_{it}$ = the log of the net worth per share of stock of *i insurance company* for time *t*,
 ε_{it} = the residual error term.

4. Variables and Measures

In this study stock return of insurance company is used as dependent variable size, book-to-market equity ratio, net worth per share is used as independent variable. The definition of these dependent and independent variables are described in the following paragraphs.

Stock Returns (R_t)

In this study annual stock price data and annual dividend data is used to estimate the stock return. Stock return is obtained as:

$$R_{i,t} = \frac{P_{it} - P_{it-1} + D_{it}}{P_{it-1}} \quad (3)$$

Where, $R_{i,t}$ is the annual return for stock *i* at year *t*, $P_{i,t}$ is the price of security *i* at the end of year *t* and $P_{i,t-1}$ is the price at the beginning of that year and $D_{i,t}$ is the dividend per share of stock *i* at the end of year *t*.

Firm Size [$\ln(ME)$]

The firm size is the market capitalization of the stock. In this study equity market capitalization of sampled insurance companies is taken as size of insurance companies. Equity market capitalization is defined as number of share outstanding times closing price of the stock. In this study the natural logarithm of market capitalization, $\ln(ME)$ is used as a proxy for firm size, in consideration of the size effect. Equity Market capitalization of firm *i* in year *t* is given by:

$$ME_{i,t} = (P_{i,t}) (NSO_{i,t}) \quad (4)$$

Where, $P_{i,t}$ is the stock price for firm *i* at the end of June of year *t* and $NSO_{i,t}$ is the number of shares outstanding for firm *i*, at that point in time.

Book-to-Market Equity Ratio (BE/ME)

The book-to-market equity ratio (BE/ME) is the ratio of book value of equity and market value of equity. It is used as another independent variable. The book-to-market ratio (BE/ME) is obtained as:

$$BE/ME_{i,t} = \frac{BE_{i,t-1}}{ME_{i,t-1}} \quad (5)$$

Where, $BE_{i,t-1}$ is the book value of a firm's equity at the end of year $t-1$ and $ME_{i,t-1}$ is the market value of equity at the end of year $t-1$.

Net Worth per Share (NWPS)

Net worth per share (NWPS) is used as another independent variable in this study. Net worth per share (NWPS) is obtained as:

$$NWPS_{i,t} = \frac{SE_{i,t-1}}{N_{i,t-1}} \quad (6)$$

Where, $SE_{i,t-1}$ is amount of shareholders equity of firm i at year $t-1$ and $N_{i,t-1}$ is the number of share outstanding of firm i at the end of year $t-1$.

5. Presentation and Analysis of Data

In this section, the analysis of secondary data collected from Securities Board of Nepal (SEBON), NEPSE, and annual report of the sample company is conducted. Book value of equity, cash flows, and net income after taxes are extracted from the financial statements of the sample companies. Similarly, information on market price per share, market capitalization, and market return are collected from the annual report published by SEBON and NEPSE.

5.1 Descriptive Statistics

As this study has adopted descriptive research design, descriptive statistics has been used to describe the characteristics of the variables under the study. The descriptive statistics (mean, median, standard deviation, range, minimum and maximum values) of the sample insurance company of the study for the period of 2000/01 to 2017/18 are presented in table 1.

Table 1

Descriptive Statistics for the period of 2000/01 to 2017/18

The table exhibits descriptive statistics (mean, median, standard deviation, range, minimum and maximum values) of the variable under the studied period of 2000/01 to 2017/18 for the 12 insurance companies listed on NEPSE with 167 observations. Size (ME) is calculated for a given year t by multiplying the number of shares outstanding with the stock price at the end of June of year t and denominated in millions of Nepalese rupees. Book-to-market equity ratio (BE/ME) is obtained by dividing the book value of equity of a company by the market value of equity. Net worth per share (NWPS) is the book equity divided by number of share outstanding, annual percentage stock return (R_j) is calculated by appreciation in price of stock plus dividend divided by closing price of the stock. $\ln(\text{ME})$ is the natural logarithm of market value of equity used as a proxy for firm size.

	<i>SIZE Rs. in million</i>	<i>NWPS (Rs)</i>	<i>BE/ME</i>	<i>R_j</i>
<i>Mean</i>	4973.7034	182.5995	.6032	42.5656
<i>Minimum</i>	45.0000	75.0000	.0366	-73.0150
<i>Maximum</i>	86830.0500	427.7400	2.1880	413.6429
<i>Range</i>	86785.0500	352.7400	2.1514	486.6579
<i>Std. Deviation</i>	12099.7671	62.5205	.4936	85.5437
<i>Skewness</i>	4.0328	1.3154	.8358	1.8328
<i>Kurtosis</i>	18.6685	2.4344	-.1601	3.1387

The value of equity market capitalization of common stock (Size) of Nepalese insurance companies ranges from minimum Rs 45 million to maximum Rs 86830.05 million with average of Rs 86785.05 million. This wide range of minimum and maximum value of market equity indicates that firms included in the sample vary significantly in terms of their size. Similarly, the mean value of book-to-market equity ratio (BE/ME) is .6032, where as it's minimum and maximum values are .0366 and 2.1880 respectively. Furthermore, the mean, minimum and maximum value of net worth per share is Rs 182.5995, Rs 75 and Rs 427.74. Similarly, the stock return (R_j) ranges from minimum negative -73.0150% to maximum 413.6429 %, with average return of 486.6579%. Thus, the large range of the stock return of sampled insurance companies indicates that the firms included in the sample vary significantly in terms of their stock return also. Furthermore, the statistics of Skewness showed that all variables are positively skewed.

5.2 Correlation Analysis

The correlation coefficients between annual stock return (R_j) of Nepalese insurance companies on size [$\ln(\text{ME})$], net worth per share [$\ln(\text{NWPS})$], and book-to-market equity ratio [$\ln(\text{BE/ME})$] have been calculated for the period of 2000/01 to 2017/18. Table 2 depicts the result of correlation coefficient between the variables under study.

Table 2

Correlation Results

The Pearson correlation coefficients are calculated for earnings yield (E/P), cash flow yield (C/P), size [$\ln(\text{ME})$], net worth per share [$\ln(\text{NWPS})$], book-to-market equity ratio [$\ln(\text{BE/ME})$] and, annual returns. The variables for which correlation tests are conducted are defined below.

$\ln(\text{ME})$	=	Natural logarithm of market value of equity,
BE/ME	=	Book value of equity divided by the market value of equity,
$\ln(\text{NWPS})$	=	Natural logarithm of the net worth per share of stock,
(R_j)	=	Change in stock price during a year plus dividend per share divided by the stock price at the beginning

	$\ln \text{ME}$	$\ln \text{NWPS}$	$\ln \text{BE/ME}$	R_j
$\ln \text{ME}$	1			
$\ln \text{NWPS}$	-.110	1		
$\ln \text{BE/ME}$	-.927**	.239**	1	
R_j	.370**	.086	-.435**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The result of correlation analysis shows that there positive and significant correlation between rate of return (R_j) and equity market capitalization [$\ln(\text{ME})$]. The correlation between $\ln(\text{ME})$ and R_j is .370 which is significant at one percent level of significant.

Similarly, the correlation coefficient between $\ln(\text{NWPS})$ and R_j is .086 but insignificant. Finally, the negative correlation between $\ln(\text{BE/ME})$ and R_j has been observed. The correlation coefficient between these two variables found to be negative .435 which significant at 1 percent level of significant.

5.3 Regression Analysis

The cross-sectional multivariate regression model is estimated using the annual returns of individual firms as the dependent variable, and firm specific attributes as the explanatory variables. Interpretations on the factors' influence on stock return are based on t-values and p values. Regression Model 1 is estimated for all sampled insurance company, regression Model 2 is estimated for life insurance company and Model 3 is estimated for non-life insurance company using the basic model presented in equation 2.

Model I

R_{it}	=	-247.442**	- 19.263 **	$\ln(\text{ME})_{it}$	- 74.581***	$\ln(\text{BE/ME})_{it}$	+ 67.590***	$\ln(\text{NWPS})_{it}$
se	=	98.245	8.357		16.091		19.571	
t	=	(-2.519)	(-2.305)		(-4.635)		(3.452)	
p	=	.013	.022		.000		.001	
Adjusted R^2 = .238		F = 18.280 **		DW = 1.927		N = 167		

(Note: *** significant at one percent, ** significant at five percent, * significant at ten percent.)

Model 1 presents the result of cross-sectional multivariate regression of all sampled insurance companies. The rate of return of Nepalese insurance companies (R_j) is dependent variable and size [$\ln(\text{ME})$], net worth per share [$\ln(\text{NWPS})$], book-to-market equity ratio [$\ln(\text{BE/ME})$] are independent variables. The F statistics of Model 1 is 18.280 which is significant at 1 percent level of significant which indicates that the model is best fit. Similarly, the adjusted R^2 of is 23.8% which indicates that the dependent variable is explained by 23.8 percent by independent variables included under the study. The coefficient of $\ln(\text{ME})$ is negative 19.263 which is significant at 5 percent level of significant and the coefficient of $\ln(\text{BE/ME})$ is negative -74.581 which is significant at 1 percent level of significant. Finally, the coefficient of $\ln(\text{NWPS})$ is 67.590 which is significant at 1 percent level of significant. Furthermore, DW statistics 1.927 indicates that there is no evidence of autocorrelation.

5.3.1 Multicollinearity Test of the Variables

To check the multicollinearity of the independent variable of model 1 variance influence factor (VIF) is used. The result of VIF is presented in table 3. As per table 3 all independent variables have VIF value less than 10 which is the evidence of no multicollinearity of the independent variables. Thus, this model is free from the problem of multicollinearity.

Table 3*Value of Variance Influence Factor (VIF) of Independent Variables*

<i>Variables</i>	<i>VIF</i>
<i>LnME</i>	7.868
<i>LnBEME</i>	8.244
<i>LnNWPS</i>	1.171

Model 2

$R_{it} =$	-390.249**	- 21.404 $Ln(ME)_{it}$	- 60.250** $Ln(BE/ME)_{it}$	+ 104.318*** $Ln(NWPS)_{it}$
$se =$	163.468	13.545	24.282	34.347
$t =$	(-2.387)	(-1.580)	(-2.481)	(3.037)
$p =$	.021	.120	.016	.004
Adjusted $R^2 = .153$ $F = 4.361$ ** $DW = 1.99$ $N = 57$				

(Note: *** significant at one percent, ** significant at five percent, * significant at ten percent.)

Model 2 presents the result of cross-sectional multivariate regression of life insurance companies only. The F statistics of Model 2 is 4.361 which is significant at 5 percent level of significant which indicates that the model is best fit. Similarly, the adjusted R^2 of is 15.3%. The coefficient of $Ln(ME)$ is negative 21.404 and statistically insignificant. The coefficient of $Ln(BE/ME)$ is negative -60.250 which is significant at 5 percent level of significant. Finally, the coefficient of $Ln(NWPS)$ is 104.318 which is significant at 1 percent level of significant. Moreover, DW statistics 1.99 indicates that there is no evidence of autocorrelation.

5.3.2 Multicollinearity Test of the Variables

Similarly, the multicollinearity of the independent variable of model 2 is examined through variance influence factor (VIF). The result of VIF is presented in table 4. As depicted in table 4 all independent variables have VIF value less than 10 which is the evidence of no multicollinearity of the independent variables. Thus, this model is free from the problem of multicollinearity.

Table 4*Value of Variance Influence Factor (VIF) of Independent Variables*

<i>Variables</i>	<i>VIF</i>
<i>LnME</i>	4.625
<i>LnBEME</i>	4.747
<i>LnNWPS</i>	1.209

Model 3

$R_{it} =$	-79.924	- 21.807* $Ln(ME)_{it}$	- 93.950*** $Ln(BE/ME)_{it}$	+ 36.676 $Ln(NWPS)_{it}$
$se =$	125.857	11.213	21.330	25.473
$t =$	(-.635)	(-1.945)	(-4.405)	(1.440)
$p =$	.527	.054	.000	.153
Adjusted $R^2 = .298$ $F = 16.407$ *** $DW = 1.926$ $N = 110$				

(Note: *** significant at one percent, ** significant at five percent, * significant at ten percent.)

Finally, result of cross-sectional multivariate regression of non-life insurance companies have been presented in Model 3. The F statistics of Model 3 is 16.407 which is significant at 1 percent level of significant. Similarly, the adjusted R^2 of is 29.8%. The coefficient of $\text{Ln}(\text{ME})$ is negative 21.807 which is significant at 10 percent level of significant. The coefficient of $\text{Ln}(\text{BE/ME})$ is negative -93.950 which is significant at 1 percent level of significant. Finally, the coefficient of $\text{Ln}(\text{NWPS})$ 36.676 is found statistically insignificant. Moreover, DW statistics 1.926 indicates that there is no evidence of autocorrelation.

5.3.3 Multicollinearity Test of the Variables

Finally, the multicollinearity of the independent variable of model 3 has been evaluated through variance influence factor. The result of VIF is presented in table 5. As depicted in table 5 all independent variables have VIF value less than 10 which is the evidence of no multicollinearity of the independent variables. Thus, this model is free from the problem of multicollinearity.

Table 5

Value of Variance Influence Factor (VIF) of Independent Variables

<i>Variables</i>	<i>VIF</i>
<i>LnME</i>	6.678
<i>LnBEME</i>	6.521
<i>LnNWPS</i>	1.133

6. Summary and Conclusion

This study has evaluated the explanatory power of firm-specific attributes including size (ME), book-to-market equity (BE/ME), and net worth per share (NWPS), on average stock returns of Nepalese insurance companies listed on Nepal Stock Exchange. For this purpose of the study 12 insurance companies (5 life and 7 non-life) out of 22 insurance companies listed on NEPSE (Mid-July, 2018) has been taken as sample of the study. The study covers the period of 2000/01 to 2017/18 with 167 observations.

The results confirm some of the existing evidences of developed markets, but contradictory findings are also brought to light. The result of this study concluded that the equity market capitalization of the firm [$\text{Ln}(\text{ME})$], the ratio book equity to market equity [$\text{Ln}(\text{BE/ME})$] have negative impact on stock return and net worth per share [$\text{Ln}(\text{NWPS})$] have positive impact on average stock return of Nepalese insurance companies. The coefficient of $\text{Ln}(\text{ME})$ has been found to be negative and significant in Model 1 (all insurance companies) and in Model 3 (non-life insurance companies) but the significance of $\text{Ln}(\text{ME})$ has been loosed in Model 2 (life insurance companies). The finding of size effect is similar with the findings of in many developed countries such as Banz (1981), Chan, Hamao, and Lakonishok (1991), and Fama and French (1992) in U.S. and Japanese markets. Size is significant with the negative sign, which indicates that small firms tend to outperform large firms.

Similarly, the coefficient of $\text{Ln}(\text{NWPS})$ has been found positive and significant in Model 1 (all insurance companies) and Model 2 (Life Insurance companies) but its significance has been loosed in Model 3 (non-life insurance companies). Finally, the coefficient of $\text{Ln}(\text{BE/ME})$ has been found to be negative and significant in all Models. This result is contradicts with the

result of Stattman (1980) who found that firms with high BE/ME ratios outperformed firms with low BE/ME equity and Rosenberg, Raid and Lastein (1985) who also documented a significant positive relation between BE/ME and average return on U.S. stocks.

Since $\ln(\text{BE/ME})$ has sowed significant and negative coefficient in all models, this study, therefore, concludes that book to market equity [$\ln(\text{BE/ME})$] has strongest explanatory power for explaining the stock return of Nepalese insurance companies listed on Nepal Stock Exchange than other variables taken in this study i. e. $\ln(\text{ME})$ and $\ln(\text{NWPS})$.

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Appendix: List of Sample insurance companies

S.No.	Name of the Commercial Bank	Type	Sample Period	No. of Observations
1	Asian Life Insurance Co. Ltd.	Life	2010/11-2016-17	7
2	Everest Insurance Co. Ltd.	Non-life	2009/07/-2017/18	12
3	Himalayan Gen. Insu. Co.Ltd.	Non-life	2000/01-2017/18	18
4	Life Insurance Co. Nepal	Life	2003/04-2017/18	15
5	Lumbini General Insurance	Non-life	2008/09-2017/18	10
6	National Life Insurance Co. Ltd.	Life	2004/05-2017/18	14
7	Neco Insurance Co.	Non-life	2000/01-2017/18	18
8	Nepal Life Insurance Co. Ltd.	Life	2003/04-2017/18	15
9	Premier Insurance co. Ltd.	Non-life	2000/01-2017/18	18
10	Prime Life Insurance Co Ltd.	Life	2010/11-2016/17	7
11	Sagarmatha Insurance Co. Ltd	Non-life	2001/02-2016/17	15
12	United Insurance Co.(Nepal)Ltd.	Non-life	2000/01-2017/18	18
Total				167