CHAPTER 4

RESEARCH RESULTS

4.1 INTRODUCTION

This chapter presents the findings of the study, which answered the research questions and objectives highlighted in chapter 1. It discusses the frequency and distribution of respondents' demographic and socioeconomic profile, follows by examining the reliability of questionnaires. Then, the analyses of the mean and standard deviation of independent, mediating and dependent variable ire explained. Also, correlation coefficient and multiple regression, which was used to test the hypotheses, are also discussed.

4.2 SUMMARY STATISTICS

The profiles of the subjects are shown in the Table 4.1. The profiles focus on the demographic and socioeconomic characteristics of the subjects. From the table, it shows that out of 441 respondents, 54.0% of the respondents are female and 46.0% are male. Most of the subjects are from the younger age bracket, with 35.3% of them are below 30 years old and another 30.2% of them are from age bracket 31 to 40 years old. In term of ethnicity, the biggest portion is Malay with 54.4%, followed by Chinese (27.9%), Indian (15.9%) and other ethnic group (1.8%). Most of the respondents are single (56.5%), whereby 43.5% of the respondents are married. The highest education level attained by most of the

respondents was degree level (35.1%), followed by SPM/STPM (23.1%) and postgraduate degree (19.0%). It shows that a big portion of the respondents are educated with high qualifications (64.5%). Meanwhile, the occupations of respondents are varied. The majority of the respondents are executives or supervisors (33.8%), follows by students, housewives or retirees who are unemployed (33.3%), managers and heads of department (12.5%), clerks and support staff (9.8%), business owners (2.3%) and only a small portion of them (1.8%) are senior level executives. In term of individual monthly income, 76.2% of the respondents earn RM4,000 and below every month, with 36.3% earn RM2,000 and below. The rest earn monthly income of RM4,001 - RM6,000 (17.2%), RM6,001 - RM8,000 (3.9%), RM8,001 - RM10,000 (1.6%) and RM10,001 and above (1.1%).

Table 4.1: Demographic/Socioeconomic Profile of the Respondents

Characteristics	Frequency	Percentage (%)
Gender		
Female	238	54.0
Male	208	46.0
Age		
20 years old and below	48	10.9
21 - 30 years old	209	24.4
31 - 40 years old	133	30.2
41 - 50 years old	41	9.3
51 - 60 years old	10	2.3
Ethnicity		
Chinese	123	27.9
Indian	70	15.9
Malay	240	54.4
Others	8	1.8
Marital Status		
Married	192	43.5
Single	249	56.5
Education Level		
Postgraduate Degree	84	19.0
Professional Certificate	46	10.4
Bachelor's Degree	155	35.1
Diploma	54	12.2
SPM / STPM	102	23.1
Occupation		
Top Management (CEO, GM, MD)	8	1.8
Middle Management (HOD, Manager)	55	12.5
Supervisor/Executive	149	33.8
Clerical/Supporting Staff	43	9.8
Own Business	10	2.3
Others	29	6.6
Unemployed (student, housewife, retired)	147	33.3
Monthly Income		
RM2,000 and below	160	36.3
RM2,001 - RM4,000	176	39.9
RM4,001 - RM6,000	76	17.2
RM6,001 - RM8,000	17	3.9
RM8,001 - RM10,000	7	1.6
RM10,001 and above	5	1.1

4.3 CONSTRUCT RELIABILITY

4.3.1 Cronbach's Alpha

Construct reliability were assessed using Cronbach's alpha. Nunnally (1978) suggests that the minimum acceptable alpha for scale reliability is 0.70 and the results are well-above the acceptable point. In this study, 37 items were tested for their reliability. Table 4.2 shows the component and total reliabilities of service quality components, perceived value, satisfaction and loyalty. The findings show that the reliability coefficients for all dimensions are above 0.70. The reliability scores are consistently high in all dimensions: Cronbach's alpha for tangibility is 0.827, reliability is 0.900, responsiveness is 0.713, assurance is 0.892 and empathy is 0.840. Perceived value and satisfaction score on the alpha coefficient are 0.906 and 0.926 respectively and finally, the alpha coefficient for loyalty is 0.863. All the alphas exceed the minimum accepted limit of 0.70.

Table 4.2: Reliability Analysis of Research Variables

Research Variables	Number of Measures	Cronbach's Alpha
Service Quality		
Tangibility	4	0.827
Reliability	5	0.900
Responsiveness	4	0.713
Assurance	5	0.892
Empathy	4	0.840
Perceived Value	4	0.906
Satisfaction	4	0.926
Loyalty	7	0.863

4.4 DESCRIPTIVE STATISTICS

Table 4.3 presents the mean and standard deviation for the responses on the five service quality dimensions, perceived value, satisfaction and loyalty towards the telco service centre. The cut-off point for agreement level is 3.0.

Table 4.3: Descriptive Statistics of Research Variables

Research Variables	Mean	Standard Deviation	Skewness
Tangibility	4.384	0.834	-0.399
Reliability	3.986	0.981	-0.369
Responsiveness	4.006	0.849	-0.274
Assurance	4.110	0.867	-0.510
Empathy	3.917	0.914	-0.353
*Service Quality	4.081	0.750	-0.387
Perceived Value	3.871	1.045	-0.346
Satisfaction	4.188	0.989	-0.429
Loyalty	4.046	0.982	-0.222

*Service Quality mean score is deduced from the average mean scores of tangibility, reliability, responsiveness, assurance and empathy.

In general, most of the respondents agreed that the telco service centres are within the agreement range on all the tangibility items with the mean value 4.384 and standard deviation 0.834, which is the highest score among the other constructs. The results further indicate that most respondents rated their telco service centre as having modern-looking and visually-appealing facilities,

equipment and materials that are associated with the service. They also agreed that the employees' appearance at the service centre is neat and professional-looking. Mean rating pertaining to reliability aspect of the telco service centre is slightly lower than tangibility mean rating but generally respondents still agreed and rated the service centre to be reliable with a mean value of 3.986 and standard deviation 0.981 as indicated in the table. The analysis reveals that the respondents perceived their telco service centre as quite reliable in terms of keeping promises, showing keen interest in solving problems and providing the right services.

Mean score for responsiveness is also consistent with the mean scores of the others, which is 4.001 and standard deviation 0.849. The respondents agreed that the employees at the telco service centre provide timely information on the services to be performed, give prompt services, always willing to help customers and generally are not too busy to respond to customers' request. Assurance is the knowledge and courtesy of employees and their ability to instil trust and confidence. Overall, respondents seem to be comfortable with the level of assurance that the telco service centre provide for customers (mean value of 4.110 and standard deviation 0.867), in terms of confidence, courteousness and product knowledge.

The analysis also indicates that the employees at the service centre are able to instil the confidence in customers. Majority of the respondents also agreed that the operating hours of the telco service centre are convenient, and the employees give personal attention and sensitive to customer's interest and

needs with the mean value of 3.917 and standard deviation 0.914. The mean score of the overall service quality was also computed and generally the respondents agreed their telco service centre has provided them quality service at mean value 4.0805 and standard deviation 0.749.

As for the perceived value construct, the respondents slightly agreed that the prices charged for the service is reasonable, the services rendered is value-for-money and worthwhile, and this is demonstrated by the mean score for the construct, which is 3.871 and standard deviation 1.045. Respondents also comparatively satisfied with the services provided by their telco service centre and happy with their choice to patronize the service centre as shown by the mean score of 4.188 and standard deviation 0.988. Also, the respondents are relatively loyal to their service provider as the result of the acceptable quality services provided by the service centre and this is proved by the mean score for the loyalty construct, which is 4.046 and standard deviation 0.982.

In accessing the normality of the constructs, the skewness of each of the construct is examined. From Table 4.3, all the constructs have negative skewness values and less than -1.0, indicating a clustering of scores at the high end, which means most customers are reasonably happy with the tangibility, reliability, responsiveness, assurance and empathy aspects of the telco service centres, as well as reasonably positive perceived value, satisfaction and loyalty. From the skewness analysis, it can be concluded that the distribution of scores for all the constructs are reasonably ‘normal’.

4.5 TESTING OF HYPOTHESES

4.5.1 Direction of Relationship between Constructs

In order to test the hypotheses, two sets of analyses were conducted: correlation-based (refer to Table 4.4) and regression-based (refer to Table 4.6-4.9), and both analyses are presented and discussed below.

The relationship between variables was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation in the assumptions of normality, linearity and homoscedasticity. Table 4.4 shows the correlation indices of satisfaction and loyalty variables with service quality dimensions and perceived value. This analysis has provided support for all the hypotheses as the result shows that all the seven variables (tangibility, reliability, responsiveness, assurance, empathy, service quality and perceived value) have a positive meaningful linear relationship with satisfaction and loyalty variables. The strongest correlation coefficient is between the overall service quality (SQ) and satisfaction (SA) (0.735), which means high levels of service quality at the telco service centre is associated with higher levels of customer satisfaction.

Table 4.4: Summary of Pearson Product-Moment Correlation Coefficients

	RL	RS	AS	EM	PV	SA	LO	SQ
TA	0.609	0.476	0.519	0.451	0.363	0.451	0.301	
RL		0.765	0.705	0.682	0.521	0.659	0.468	
RS			0.697	0.651	0.458	0.611	0.452	
AS				0.780	0.536	0.662	0.567	
EM					0.507	0.697	0.540	
PV						0.645	0.495	0.569
SA							0.719	0.735
LO								0.555

TA=Tangibility, RL=Reliability, RS=Responsiveness, AS=Assurance, EM=Empathy, PV=Perceived Value, SA=Satisfaction, LO=Loyalty, and SQ=Service Quality.

4.5.2 Relationship between Service Quality Dimensions and Satisfaction

Multiple regression analysis was used to examine how well the service quality dimensions i.e. tangibility, reliability, responsiveness, assurance and empathy individually predict customer satisfaction towards the services offered by the telco service centre. The adjusted R-square value offers noteworthy understanding on the overall ability of service quality dimensions (tangibility, reliability, responsiveness, assurance and empathy) to explain the variation in the score of customer satisfaction. 56.3% of variability in satisfaction can be predicted by the service quality dimensions. Table 4.6 shows the multiple regression analysis between the five service quality dimensions and customers satisfaction.

Table 4.5: Regression Output: Service Quality Dimensions and Satisfaction

No	Hypothesis	Standardized coefficient (β)	t-value	Sig.
H1a	Tangibility is positively correlated to customer satisfaction	0.036	0.897	0.370 ($p > 0.05$)
H1b	Reliability is positively correlated to customer satisfaction	0.220	3.790	0.000 ($p < 0.05$)
H1c	Responsiveness is positively correlated to customer satisfaction	0.090	1.715	0.087 ($p > 0.05$)
H1d	Assurance is positively correlated to customer satisfaction	0.146	2.556	0.011 ($p < 0.05$)
H1e	Empathy is positively correlated to customer satisfaction	0.359	6.731	0.000 ($p < 0.05$)

Std. Error of Estimate = 0.65681
R^2 = 0.563 Adjusted R^2 = 0.558

Analysis of Variance

Model	Sum of Squares	df	Mean Square	F value	Sig.
Regression	161.595	5	32.319	44.066	0.000 ($p < 0.001$)
Residual	319.040	435	.733		

Hypothesis H1a tests the relationship of tangibility aspect of the telco service centre to satisfaction aspect of the telco service centre, and regression output is represented in Table 4.5. As shown in the table, the standardized coefficient (β) between tangibility and satisfaction is 0.036 and the p-value is 0.370, which is more than α at 0.05. This means that tangibility does not make a significant unique contribution to the prediction of satisfaction. Thus, the result does not provide support for H1a.

Hypothesis H1b tests the relationship between reliability aspect of the telco service centre and customer satisfaction. From the multiple regression analysis, the standardized coefficient (β) between reliability and satisfaction is 0.220 and the p-value is 0.000, which is significant at α equals to 0.05. This means that reliability makes a strong unique contribution in predicting satisfaction, when the variance explained by all other variables in the model is controlled and this is also supported with its p-value, which is less than 0.05. Thus, the result provides support for H1b.

Hypothesis H1c tests the relationship between responsiveness of the telco service centre and customer satisfaction. From the multiple regression analysis, the standardized coefficient (β) between reliability and satisfaction is 0.090 and the p-value is 0.087, which is more than α at 0.05. This means that reliability does not make a significant unique contribution to the prediction of satisfaction. Thus, the result does not provide support for H1c.

Hypothesis H1d tests the relationship between assurance aspect of the telco service centre and customer satisfaction. The standardized coefficient (β) between assurance and satisfaction is 0.146 and the p-value is 0.011, which is less than α at 0.05. This means that assurance makes a relatively strong unique contribution in predicting satisfaction, when the variance explained by all other variables in the model is controlled. Thus, the result provides support for H1d.

The last Hypothesis H1e (that empathy is positively correlated to customer satisfaction) was also supported. The standardized coefficient (β) between empathy and satisfaction is 0.359 and the p-value is 0.000, which is less than α at 0.05. This means that empathy makes the strongest strong unique contribution in predicting satisfaction, compared to the other four dimensions.

In short, empathy is the most important aspect of service quality of the telco service centre for customer satisfaction, followed by reliability and assurance. Tangibility and responsiveness on the other hand, do not make significant contribution to the model.

4.5.3 Relationship between Service Quality (Overall), Perceived Value and Satisfaction

Multiple regression analysis was also performed to examine how well the service quality and perceived value predict customer satisfaction towards the services offered by the telco service centre (Hypothesis 1 and 2). The adjusted R-square value is very high at 61.6%, which offers striking insight on the overall ability of service quality and perceived value to explain the variation in the score of customer satisfaction. 61.6% of variability in satisfaction can be predicted by service quality and perceived value constructs and this shows that variation in satisfaction is better predicted by both service quality and perceived value, compared to service dimensions only as discussed in previous section. The effects of both service quality and perceived value on satisfaction are statistically significant where $t = 15.097$, $p < 0.05$ for service quality, $t = 9.325$, $p < 0.05$ for perceived value, and $F(2,438) = 351.085$, $p < 0.001$. Hence, perceptions of high service quality may lead to high satisfaction, which provides support to Hypothesis 1.

Also, better perceived value may lead to better satisfaction, which provides support to Hypothesis 2. Support for both Hypothesis 1 and Hypothesis 2 validates the hypotheses that service quality and perceived value are correlated with customer satisfaction. This study has empirically proven these relationships, particularly between perceived value and satisfaction despite the dearth of research in establishing the latter relationship. The explanatory power for customer satisfaction was very high when both service quality and perceived

value were assessed together, holding important practical implications for telco service providers. Table 4.6 shows the multiple regression analysis between the five service quality dimensions and customers satisfaction.

Table 4.6: Regression Output: Service Quality, Perceived Value and Satisfaction

No	Hypothesis	Standardized coefficient (β)	t-value	Sig.
H1	Service quality is positively correlated to customer satisfaction	0.544	15.097	0.000 ($p < 0.05$)
H2	Perceived value is positively correlated to customer satisfaction	0.366	9.325	0.000 ($p < 0.05$)

Std. Error of Estimate = 0.61387
R^2 = 0.616 Adjusted R^2 = 0.614

Analysis of Variance

Model	Sum of Squares	df	Mean Square	F value	Sig.
Regression	264.605	2	132.302	351.085	0.000 ($p < 0.001$)
Residual	165.055	438	0.377		

4.5.4 Relationship between Satisfaction and Loyalty

Table 4.7 shows the regression analysis between customer satisfaction and loyalty to test Hypothesis 3. It shows the effect of overall satisfaction of telco service centre customers on their loyalty. The overall customer satisfaction of seems to have a statistically significant and positive effect on their loyalty as well (the standardized coefficient (β) is 0.719 and the p-value is 0.000, which is significant at α equals to 0.05. Thus, H3 is also supported.

Table 4.7: Regression Output: Satisfaction & Loyalty

No	Hypothesis	Standardized coefficient (β)	t-value	Sig.
H3	Customer satisfaction is positively correlated to customer loyalty	0.719	21.706	0.000 ($p < 0.05$)

Std. Error of Estimate = 0.68306

R^2 = 0.518 Adjusted R^2 = 0.517

Analysis of Variance

Model	Sum of Squares	df	Mean Square	F value	Sig.
Regression	219.825	1	219.825	471.148	0.000 ($p < 0.001$)
Residual	204.826	439	0.467		

4.5.5 Mediating Effect of Satisfaction between Service Quality and Loyalty

Table 4.8 shows the results of the regression analyses of the independent variable (service quality), the mediating variable (satisfaction) and the dependent variable (loyalty).

Table 4.8: Regression Summary: Mediating Effect of Satisfaction between Service Quality and Loyalty

	R	R^2	R^2 Change	Beta	F	Sig.
Regression 1: Service Quality on Loyalty	0.555	0.308		0.555	195.26	0.000 ($p < 0.05$)
Regression 2: Service Quality on Satisfaction	0.735	0.540		0.735	514.47	0.000 ($p < 0.05$)
Regression 3: Step 1: Satisfaction on Loyalty	0.719	0.518		0.719	471.15	0.000 ($p < 0.05$)
Step 2: Satisfaction on Loyalty Step 2: SQ on Loyalty	0.721	0.519	0.002	0.677 0.057	236.46	0.000 ($p < 0.05$)

In regression 1, the R-square shows that only 30.8% of the variance in loyalty is predicted by service quality. Although only a small amount of variance is explained in loyalty by service quality, the table shows that the relationship (R) is significant ($F=195.26$, $p=0.000$) with beta 0.555 ($p<0.05$). The direction of the relationship is positive: as predicted, the higher the service quality in the telco service centre, customers are more likely to be loyal. The analysis shows that

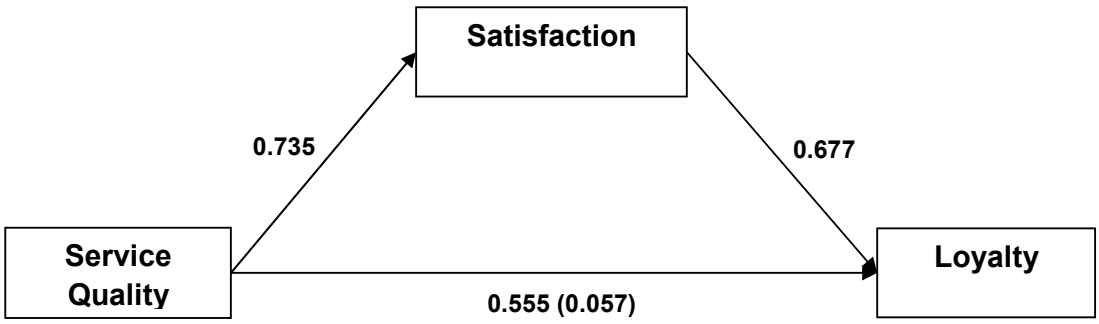
the first condition for mediation has been satisfied (path c: the independent variable and dependent variable are significantly related).

In regression 2, the R-square shows that 54.0% of the variance in satisfaction is predicted by service quality. Although only a small amount of variance is explained in loyalty by service quality, the table shows that the relationship (R) is significant ($F=514.5$, $p=0.000$) with significant beta 0.735 and ($p<0.05$). The direction of the relationship is positive: as predicted, the higher the service quality in the telco service centre, customers are more likely to be satisfied. The analysis shows that the second condition for mediation has been satisfied (path a: the independent variable and mediating variable are significantly related).

Table 4.8 also shows regression 3, which was done in two steps. At step 1, satisfaction explains 51.8% of the variance in loyalty (R-square=0.518). At step 2, service quality does not add significantly to the variance explained (R-square change=0.002, $p=0.242$). The variance explained by the satisfaction is also significant (step 1: $F=471.15$, $p=0.000$ and step 2: $F=236.46$, $p=0.000$). The above discussion and regression coefficients at step 2 show that satisfaction is significantly and positively related to loyalty (beta=0.67, $p<0.05$), thus meeting the third condition for mediation (path b: the mediating variable is significantly related to the dependent variable). The beta for service quality (path c), which was significant in the first analysis (beta=0.555, $p<0.05$), is no longer significant when controlling for the effects of the mediating variable, satisfaction (beta=0.057, $p<0.05$) in this third regression analysis. Thus, the final condition for demonstrating mediation has also been met and H4 is supported. Figure 4.1

presents shows the regression coefficients, with the coefficients for the effect of the independent variable on the dependent variable in both regression 1 and regression 3, with the latter in parentheses.

Figure 4.1: Mediation Model: Service Quality, Satisfaction and Loyalty



4.5.6 Mediating Effect of Satisfaction between Perceived Value and Loyalty

Table 4.9 summarises the results of the regression analyses of the independent variable (perceived value), the mediating variable (satisfaction) and the dependent variable (loyalty).

Table 4.9: Regression Summary: Mediating Effect of Satisfaction between Perceived value and Loyalty

	R	R^2	R^2 Change	Beta	F	Sig.
Regression 1: Perceived Value on Loyalty	0.495	0.245		0.495	142.53	0.000 ($p < 0.05$)
Regression 2: Perceived Value on Satisfaction	0.645	0.416		0.645	312.6	0.000 ($p < 0.05$)
Regression 3: Step 1: Satisfaction on Loyalty	0.719	0.518		0.719	471.15	0.000 ($p < 0.05$)
Step 2: Satisfaction on Loyalty Step 2: PV on Loyalty	0.721	0.519	0.002	0.685 0.053	236.60	0.000 ($p < 0.05$)

In regression 1, the R-square shows that only 24.5% of the variance in loyalty is predicted by perceived value. Although only a small amount of variance is explained in loyalty by perceived value, the table shows that the relationship (R) is significant ($F=142.53$, $p=0.000$) with beta 0.495 ($p<0.05$). The direction of the relationship is positive: as predicted, the higher the perceived value in the telco service centre, customers are more likely to be loyal. The analysis shows that

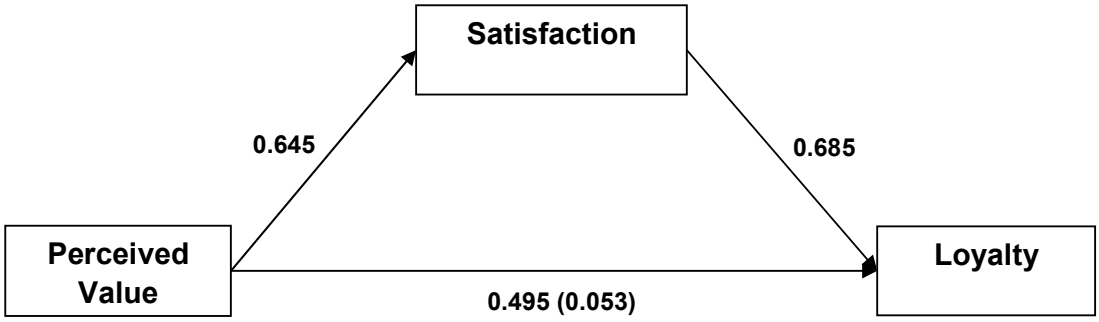
the first condition for mediation has been satisfied (path c: the independent variable and dependent variable are significantly related).

In regression 2, the R-square shows that 41.6% of the variance in satisfaction is predicted by perceived value. Although only a small amount of variance is explained in loyalty by perceived value, the table shows that the relationship (R) is significant ($F=312.6$, $p=0.000$) with beta 0.645 ($p<0.05$). The direction of the relationship is positive: as predicted, the higher the perceived value in the telco service centre, customers are more likely to be satisfied. The analysis shows that the second condition for mediation has been satisfied (path a: the independent variable and mediating variable are significantly related).

Table 4.9 also shows regression 3, which was done in two steps. At step 1, satisfaction explains 51.8% of the variance in loyalty (R-square=0.518). At step 2, perceived value does not add significantly to the variance explained (R-square change=0.002, $p=0.221$). The variance explained by the satisfaction is also significant (step 1: $F=471.15$, $p=0.000$ and step 2: $F=236.60$, $p=0.000$). The above discussion and regression coefficients at step 2 show that satisfaction is significantly and positively related to loyalty (beta=0.685, $p<0.05$), thus meeting the third condition for mediation (path b: the mediating variable is significantly related to the dependent variable). The beta for perceived value (path c), which was significant in the first analysis (beta=0.495, $p<0.05$), is no longer significant when controlling for the effects of the mediating variable, satisfaction (beta=0.053, $p<0.05$) in this third regression analysis. Thus, the final condition for demonstrating mediation has also been met and H5 is therefore, supported.

Figure 4.2 presents shows the regression coefficients, with the coefficients for the effect of the independent variable on the dependent variable in both regression 1 and regression 3, with the latter in parentheses.

Figure 4.2: Mediation Model: Perceived Value, Satisfaction and Loyalty



4.6 CONCLUSION

This chapter presented the statistical results of descriptive statistics analysis, the measures validation and hypotheses testing done in this study. Five research questions have been answered, summarized and discussed in the following chapter.