Use of PLS path modeling to study customer satisfaction of two Lebanese mobile operators

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Introduction

The purpose of this study is to measure customer satisfaction of two mobile operators in Lebanon, Alfa and MTC Touch, from a sample of the telephone customers for these two operators; We draw 500 phone active numbers randomly selected from their system database. After telephone contacts, we were able to record and completed 600 questionnaires referred to the EPSI (European Performance Satisfaction Index) questionnaire made on 23 questions and distributed equally between the two operators; the data collection was carried out between May 2012 and June 2012.

The goal is to construct the structural equations modeling and to estimate the measure of customer satisfaction using the ECSI [1] model by PLS approach and build a satisfaction index for each operator. In our work, we discuss the ECSI model (European Customer Satisfaction Index). Indeed, this model solves the main difficulties in measuring customer satisfaction. It provides best reliable results and do better understand and monitor the quality of customer relationship business. The hypothesis are tested and discussed.

1 Empirical study.

It should be noted that all manifest variables to the corresponding latent variables have a reflective measurement model. After the convergence of the algorithm of PLS, the structural path significance testing of both inner and outer model is verified by a bootstrap procedure with 300 subsamples . The results showed that the factor "Customer Complaints" has to be removed from both models; From Alfa model, the relation of Perceived Quality and Image to Satisfaction are not significant and have to be removed ; From the Mtc model, the relation of Perceived Quality"," Image" and "customer expectation" to "Satisfaction" have to be removed.

After applying these modifications and using the algorithm PLSPM by SmartPLS software [2], we obtain the final models for Alfa and Mtc Touch as follows: For Alfa model, the coefficient of determination R^2 for Satisfaction is 0.55 this means that Expectation and Perceived Value are moderately explain 55% of the variance in customer Satisfaction. For Loyalty R^2 is 0.482 this means that Satisfaction and Image explain 48.2% of the variance of Loyalty, the important factor in mobile phone industry . In the other side, the inner model suggests that Expectation has the strongest effect on Satisfaction (0.501) followed by Perceived Value (0.309). Satisfaction has the strongest effect on Loyalty (0.427) followed by Image (0.348).

For Mtc model, Perceived Value is moderately explain 54.6% of the variance of Satisfaction. Satisfaction and Image explain 57.6% of the variance of Loyalty. In the other side , the inner model suggests that the only important impact on Satisfaction is Perceived Value (0.739). Satisfaction has the strongest effect on Loyalty (0.45) then Image (0.39). Image has no direct impact on Satisfaction.

For Alfa: Satisfaction = 0.5014Expectation + 0.3085PerceivedValue. Loyalty=0.427 Satisfaction+0.34 Image.

For MTC Touch: Satisfaction = 0.7392PerceivedValue. Loyalty=0.45 Satisfaction+0.39 Image.

So Perceived Value turned out to be such an important factor in the two models but the surprise that for Mtc operator it is the only strong predictor of Satisfaction. For Alfa, the most important impact is Expectations.

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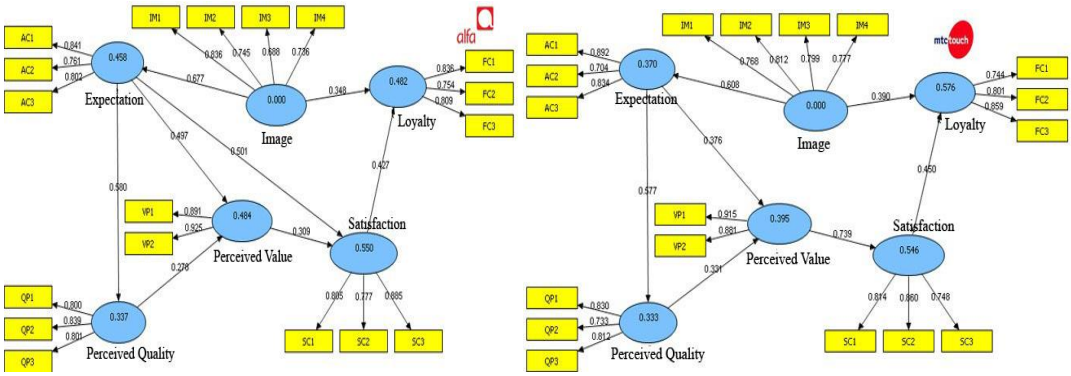

Figure 1. Final Path diagram of Alfa and MTC touch operators.

2 Comparison of the two models

For both mobile operators, the quality indices considered by the communality, the redundancy and the Goodness Of Fit found have good predictive and discriminant validity. Results are shown as follows:

Table 1. Comparison of results found for Alfa and MTC touch models.

	Alfa		Mtc Touch	
	Initial Model	Final Model	Initial Model	Final Model
Reliability	0.8630	0.8630	0.8515	0.8515
A.V.E	0.6780	0.6778	0.6570	0.6539
R^2	0.5644	0.5502	0.5920	0.5464
Redundancy	0.2738	0.3059	0.1065	0.3203
GOF	0.5283	0.5562	0.5208	0.5454
Satisfaction Index	7.7259	**7.7256**	7.7499	**7.7480**

This led to the development of an overall composite index of customer satisfaction Alfa and MTC Touch. It represents the average score in terms of overall satisfaction given to Alfa or MTC Touch for all customers which is around 7.75. It also identifies the weights (external and internal) criteria satisfaction in overall satisfaction. The Alfa and Mtc models are not significantly different in term of satisfaction indices (for H0: dif=0 versus dif≠ 0, t_{value}=0.2077 and P_{value}=0.8356).

Conclusion

In this paper customer satisfaction of both Alfa and Mtc mobile operators were compared by PLS approach using ECSI format. Perceived value was found to be the only driver of customer satisfaction for Mtc while expectation was found the most important one for Alfa;

References

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[2] K.K. Wong, "Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS". *Marketing Bulletin*, **24**, Technical Note1, 2013.