

ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL OF SCIENCE
ENGINEERING AND TECHNOLOGY

**THE SHORT-TERM AND LONG-TERM IMPACT OF MARKETING
RELATED FACTORS ON BUSINESS PERFORMANCE**



Ph.D. THESIS

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Department of Management Engineering

Management Engineering Program

FEBRUARY 2018

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

**FİRMA PERFORMANSI ÜZERİNDE PAZARLAMA İLE İLİŞKİLİ
FAKTÖRLERİN KISA VE UZUN VADELİ ETKİLERİ**



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Date of Submission : 24 January 2018
Date of Defense : 23 February 2018





To my dear parents Hülya&Nuri and my beloved husband Yiğit,



FOREWORD

I would like to sincerely thank all those who provided me great support and encouragement along the way.

I would like to express my very special heartfelt gratitude to my advisor, Prof. Dr. Nimet URAY, for the advice and support that allowed me to work on the topics for which I am truly passionate. I am extremely grateful to her for smoothing the path for this dissertation and providing invaluable insight, guidance, and inspiration along the path. Without her expertise and support, this dissertation would have never been accomplished.

I would like to express my very special thanks to my co-advisor, Prof. Dr. Burç ÜLENGİN, for generously giving me his time and advice. I am particularly grateful to him for providing invaluable insight and guidance. His involvement and support provided great contribution to the accomplishment of this dissertation.

I would particularly like to thank also my committee members, Prof. Dr. Selime SEZGİN, who reviewed several drafts of my dissertation and provided me invaluable comments; Prof. Dr. Şebnem BURNAZ and Prof. Dr. İrem EREN ERDOĞMUŞ, who provided insightful comments and valuable recommendations providing different perspectives for the study.

I owe a very important debt to GfK Turkey, Nielsen Turkey, and to the Banks Association of Turkey for providing priceless sector information and data which enabled my dissertation to have a comprehensive approach.

I am very thankful and fortunate to have such a wonderful family. I wish to express my unqualified thanks to my parents, Hülya DALKILIÇ and Nuri DALKILIÇ. I always felt their unconditional love and encouragement which make me feel always supported throughout my life.

Finally, I owe my very deepest thanks to my beloved husband, Yiğit AKDOĞAN. I could never have accomplished this dissertation without his love, support, self-sacrifice, and understanding.

Thanks for all your support and encouragement!

February 2018

Çağla Burçin AKDOĞAN

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ABBREVIATIONS

ADF	: Augmented Dickley-Fuller
BAV	: Brand Asset Valuator
BLUE	: Best Linear Unbiased Estimator
BLUP	: The Best Linear Unbiased Predictor
BQU	: Best Quadratic Unbiased
CEO	: Chief Executive Officer
CLV	: Customer Lifetime Value
CMO	: Chief Marketing Officer
CRE	: Cross Effects
CRM	: Customer Relationship Management
IDD	: Independent and Identically Distributed
FE	: Fixed Effects
FMCG	: Fast Moving Consumer Goods
GLS	: Generalized Least Squares
HLM	: Hierarchical Linear Models
IPS	: Im, Pesaran and Shin
IT	: Information Technology
KMO	: Kaiser-Meyer-Olkin
KPSS	: Kwiatkowski-Phillips-Schmidt-Shin
LLC	: Levin, Lin and Chu
LM	: Lagrange Multiplier
LSDV	: Least Squares Dummy Variables
MINQUE	: MinimumNorm Quadratic Unbised Estimation
MLE	: Maximum Likelihood Estimation
MSE	: Mean Squared Error
OLS	: Ordinary Least Squares
PIMS	: Profit Impact of Marketing Strategies
R&D	: Research and Development
RBT	: Resource-Based Theory
RBV	: Resource-Based View

ROA	: Return on Assets
ROI	: Return on Investment
RRSS	: Restricted Residual Sums of Squares
T2B	: Top Two Box
TBB	: The Banks Association of Turkey
TOM	: Top of Mind
TUIK	: Turkish Statistical Institute
TV	: Television
URSS	: Unrestricted Residual Sums of Squares
VAR	: Vector Autoregressive



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THE SHORT-TERM AND LONG-TERM IMPACT OF MARKETING RELATED FACTORS ON BUSINESS PERFORMANCE

SUMMARY

Marketing discipline has suffered from the lack of the effective assessment methods for a long time. This has had several negative consequences for the discipline. Low level of marketing accountability is one of the main outcomes. This has led to the lack of justification abilities of the marketing budgets and expenses by the marketing professionals. As a consequence, the difficulties arise regarding the establishment of a marketing-finance interface due to the lack of justification abilities of marketing budgets. Hence, this outlook of marketing discipline caused a negative impact on the marketing credibility. Thus, all these inferences result in the decreasing authority of marketing department in the organizations. However, marketing department is one of the key strategy builders of a company. With the right and effective management of the marketing strategy, the financial outlook of a firm can change dramatically. For this reason, marketing has had to improve its accountability abilities with the new assessment approaches and display its real added-value to the company. For all these reasons, marketing literature has focused on the marketing performance and marketing performance assessment topics with the support of Marketing Science Institute who identified marketing productivity among its research priorities.

The marketing performance assessment approaches aim to explain the relationships between the marketing efforts and the business performance with the financial and market-based indicators. This examination is done by using appropriate marketing metrics to generate valuable insights of the marketing's impact on performance. Based on the resource-based view, marketing productivity chain can be expanded with inclusion of the marketing resources with the aim to examine the impact of the resources on the business performance. In addition, there is the fact that marketing efforts first influence consumer minds, and just after that, the market-based performance and financial performance occur as an outcome of this impact. Therefore, the marketing productivity chain examines the consumer mind as an individual stage. Hence, the total marketing productivity chain would look like starting with the marketing resources and the marketing efforts, then analyzing the impact on the consumer mind and ultimately interpreting the market performance and financial performance as the indicators of business performance.

The measures used in the marketing performance assessment methods has been adapted according to the perspective of the marketing domain. The domain of marketing has practiced several changes in its lifetime. First started with the distribution and exchange of the goods in the beginning of 1900s, the domain has been affected by different schools and evolved according to the changing approaches. Services marketing is one of the relatively recent approaches in marketing and started to appear in the literature from 1980s onwards. The service dimension holds a crucial importance for the marketing discipline, so is the service dominant logic. Therefore, conducting the marketing performance assessment from the service perspective has

gained an increasing importance. With this new approach, the focus of the marketing scholars has moved from product marketing to the topic of services marketing. Hence, the interest of the authors has changed from the goods-oriented to the relationship-oriented exchanges. This change has affected the marketing performance assessment approaches in terms of the metrics used. With an increasing importance of the relationships, the non-financial and market-based metrics become more important than the financial metrics. Hence, the researchers tend to give more space to these metrics in their marketing performance assessment studies.

As mentioned above, measurable marketing is crucial for creation of a successful marketing strategy. Therefore, the aim of this study is to examine the impact of the marketing resources and the marketing activities on the business performance indicators through customer-based brand equity. Hence, the empirical part of this study presents a model representing a marketing productivity chain starting from resources and marketing activities and ending with business performance indicators. With this chain of marketing productivity, this model aims to provide a deep insight regarding the effects of marketing actions from short-term and long-term perspectives. With these goals, the expected contributions of this study are as follows. First, this model can be a tool which can be used in the development of the most effective marketing mix consisting of the proper marketing activities. Hence, a perfect marketing mix can be established according to the outcomes of the model. Second, the right level of marketing budget with proper dedication for each marketing activity can be created with the help of this model. Hence, this model will contribute to the management of the marketing budget which can be improved with proper budget allocation decisions for each of the marketing activities. Most importantly, this model aims to help to build a right marketing strategy and highly contribute to the success of this strategy.

This study focuses on services industry, more specifically on the banking sector in Turkey due to several reasons. First, when the studies in services industry are examined, it is recognized that the differences about marketing performance assessment in services industry is not examined in detail. Hence, this study aims to contribute to this area of marketing literature. Second, banking is a quite competitive sector. Therefore, banks are very active in their marketing actions in order to obtain a competitive position in this sector. Especially, their advertising budgets have increased to huge volumes. Hence, these big budgets need to be managed very carefully with an aim to apply the most effective and efficient marketing strategy with a long-term perspective. Therefore, this study provides a long-term perspective for the marketing performance assessment of the banking industry with the usage of panel data. Third, there are several studies examining the marketing productivity chain in the marketing literature. However, there is not any study examining banking industry through the whole chain starting from resources until the business performance. Therefore, this study will be a contribution by introducing a different perspective for the services marketing.

This study consists of two main stages: the preliminary stage and the main study. The preliminary stage includes the individual interviews with senior managers of five banks in order to discover their opinions about the banks, representative of the population, the availability and the perceived importance of marketing related resources. The main study consists of conducting analyses to test the relationships in the proposed sequence within the productivity chain context. The analyses are based on panel data consisting of four years between 2012-2015, in a quarterly basis. The data has been obtained from three data sources; namely, from GfK Turkey, Nielsen

Turkey, and the Banks Association of Turkey. Before conducting the analyses, the data have been consolidated and processed by the researcher according to the requirements of the analyses methods. The analysis consists of four steps. The first step included the Factor analysis in order to obtain customer-based brand equity in SPSS 20 program. The rest of the analyses are conducted in EVIEWS 9 program. The second step includes the unit root tests in order to determine whether the variables are stable or evolving. The third step includes the regression analyses to determine the short-term and long-term relationships between the variables. But, only the significance level of the short-term coefficients can be obtained with this test. Therefore, in order to define the significance level of the long-term coefficients, Wald test is conducted as a fourth step of the analysis.

The results indicate that the impact of the marketing resources, marketing activities, and the customer-based brand equity on the business performance change according to the length of the response period in the banking industry. Hence, there are differences in terms of the impacts of the marketing resources and the marketing activities on the business performance indicators both in the short term and long term. The same comment is also relevant for the impact of all marketing related inputs on brand equity. These differences include the changes in the impact either in terms of its direction, or it becomes significant or insignificant through the time. Hence, this result is an important knowledge when building the marketing strategy based on the marketing resources and the marketing activities. In addition, the results also confirm that the customer-based brand equity is one of the most effective factors on the business performance indicators. Therefore, the banks should make investments to improve their brand equities. In addition, the results show that the pricing mark-up and the number of the branches are the other most effective factors on the business performance indicators in the banking industry. Additionally, the results indicate that the impacts of different advertising media have differences in terms of their impacts on the customer-based brand equity and business performance indicators. While the impacts of the advertising media are changing from one business indicator to another, it would not be wrong to conclude that the cinema advertising is one of the most effective tools in terms of the all business performance indicators used in this study and the customer-based brand equity in the banking sector.

To sum up, this study will contribute the banking industry in terms of providing the knowledge of the potential impacts of their marketing resources and marketing activities on their business performance indicators as well as on their brand value with the insight of the response time. This will enable the banks to create the right portfolio in terms of the marketing mix elements which will lead to the creation of the successful marketing strategy. In addition, having the guidelines on the importance of the marketing resources and the marketing activities in terms of the response times and the potential impacts will also lead to the superior management of the marketing budget with clear allocation guidelines. Thus, this study can be treated as a comprehensive tool which would help to build and manage the marketing strategy. Hence, with these aspects, this study will provide important insights to the marketing researchers as well as to the marketing professionals for their marketing practices.



FİRMA PERFORMANSI ÜZERİNDE PAZARLAMA İLE İLİŞKİLİ FAKTÖRLERİN KISA VE UZUN VADELİ ETKİLERİ

ÖZET

Pazarlama disiplini uzun zaman boyunca etkili pazarlama performans ölçüm yöntemlerinin kısıtlı olmasından dolayı sıkıntı yaşamıştır. Bu durum pazarlama disiplini için bir takım olumsuz sonuçlara sebep olmuştur. Yapılan pazarlama bütçelerinin ve harcamalarının hesap verilebilir şekilde sunulamaması pazarlama ve finans departmanları arasındaki iletişimde çeşitli zorlukların yaşanmasına neden olmuştur. Bu durum pazarlamaya duyulan güvenin de sarsılmasına sebep olmuştur. Tüm bu olumsuz durumlar organizasyon içinde pazarlama departmanının otoritesinin azalması ile sonuçlanmıştır. Ancak, pazarlama departmanı organizasyon içinde strateji oluşturan en önemli departmanlardan biridir. Pazarlama stratejilerinin doğru yönetilmesi ile firmanın finansal yapısı önemli ölçüde değiştirilebilir. Bu nedenle pazarlama, kendine duyulan güveni yeniden yapılandıracak, pazarlama performansını değerlendirecek yeni yaklaşımlar geliştirmek zorunda kalmıştır. Böylelikle, pazarlamanın gerçek anlamdaki katma değeri ortaya konulabilecektir. Tüm bu sebeplerden dolayı pazarlama literatürü pazarlama performansı, pazarlama performansını ölçme ve değerlendirme konularına odaklanmıştır. Bu konuda bir çok pazarlama kurumu öncül rol oynarken, Marketing Science Institute pazarlama verimliliği konularına araştırma öncelikleri arasında yer vermiştir.

Pazarlama değerlendirme sistemleri pazarlama karmaşı ile firma performansı arasındaki ilişkileri finansal ve tüketici bakış açısıyla açıklamaya çalışmaktadır. Bu ilişkileri açıklarken pazarlamanın etkisini ortaya koyacak uygun ölçütlerin kullanımı önem taşımaktadır. Kaynak temelli yaklaşım doğrultusunda bu ilişki zinciri genişletilerek pazarlama kaynaklarının firma performansı üzerindeki etkileri de incelenebilir. Ayrıca bilinmektedir ki, pazarlama aktiviteleri firmanın pazar performansı ve finansal performansı üzerindeki etkilerini göstermeden önce tüketici algılarını etkilemektedir. Bu nedenle, pazarlama verimlilik zinciri adı altında tüketici algılarının incelendiği bağımsız bir aşamaya ihtiyaç vardır. Böylelikle pazarlama verimlilik zinciri, pazarlama kaynakları ve pazarlama aktiviteleri ile başlayıp, bu faktörlerin tüketici zihnindeki etkilerini açıklayan ve son adımda ise, pazar performansı ve finansal performansın bütününden oluşan firma performansı ile sona eren bir zincir yapı halini alacaktır.

Pazarlama performans değerlendirme yöntemlerinde kullanılan ölçütler zaman içinde pazarlama disiplininin kapsamına ve odaklandığı konulara bağlı olarak değişmiş ve uyum sağlamıştır. Bu anlamda, pazarlama disiplini 1900'lerin başında ürünlerin dağıtımı bakış açısıyla başlayıp, bir çok okuldan etkilenecek bakış açısı ve kapsamını zaman içinde geliştirmiştir. Bu noktada, hizmet pazarlaması 1980'lerden itibaren önem kazanmış olan göreceli olarak yeni yaklaşımlardan biri olarak ortaya çıkmıştır. Pazarlama disiplini için hizmet boyutu çok önemli olduğundan, ilişkilerin ve süreçlerin daha büyük önem kazandığı hizmet odaklı bakış açısı da oldukça önemlidir. Bu

nedenle, hizmet odaklı bakış açısıyla pazarlama performans değerlendirmesi yapmak da önem kazanmıştır. Bu değişim pazarlama performansı değerlendirme yaklaşımlarında kullanılan ölçütleri de etkilemiştir. Böylelikle, ilişkilerin daha fazla önem kazandığı bakış açısıyla, finansal olmayan ölçütlere verilen önem artmıştır. Buradan kaynaklı, pazarlama araştırmacılarının bu tip ölçütleri kullanım yaygınlığında da önemli ölçüde artış olmuştur.

Yukarıda bahsedildiği gibi, başarılı bir pazarlama stratejisi için ölçülebilir pazarlama kritik öneme sahiptir. Buradan hareketle, bu çalışmanın amacı pazarlama kaynaklarının ve pazarlama aktivitelerinin firma performansı üzerindeki etkisini müşteri temelli marka değeri aracılığıyla ortaya koymaktır. Böylelikle, bu model pazarlama kaynakları ve pazarlama aktiviteleri ile başlayıp, firma performans değerlendirmesiyle sonlanan bir pazarlama verimlilik zinciri halini almaktadır. Pazarlama verimliliği bakış açısı ile, bu model pazarlama aktivitelerinin kısa dönem ve uzun dönem etkilerine ilişkin önemli katkılar sağlamaktadır. Buradan elde edilecek bilgiler geleceğe yönelik stratejik pazarlama kararlarında önemli rol oynayacaktır. Bu hedeflerle çalışmanın amaçları şu şekilde sıralanabilir. İlk olarak, bu model pazarlama karması oluşturulurken en etkili pazarlama araçlarının kullanılmasına olanak sağlayacak bir araç olacaktır. Böylelikle, pazarlama karması en etkin şekilde oluşturulabilecektir. Diğer bir katkısı ise, her bir pazarlama aktivitesine ne ölçüde bütçe ayrılması gerektiğine dair fikir vereceğinden, pazarlama aktiviteleri için doğru seviyede bütçe dağılımı ve yönetimidir. Buradan hareketle, model doğru pazarlama stratejisinin oluşturulması ve bu stratejinin başarılı şekilde uygulanmasına yönelik önemli ölçüde katkı sağlayacaktır.

Bu çalışma hizmet sektörüne yönelik, Türkiye'deki bankacılık sektörüne ilişkin oluşturulmuştur. Bu sektörün konu alınmasının sebepleri arasında pazarlama disiplini içinde ilginin ürün odaklı yaklaşımdan hizmet odaklı yaklaşıma kaymış olması yer almaktadır. Dolayısıyla bu çalışma ile hizmet sektörüne katkı yapmak amaçlanmaktadır. Diğer taraftan, hizmet odaklı çalışmalar incelendiğinde pazarlama performansının hizmet sektöründe ölçülmesine ilişkin farklılıklar üzerinde büyük ölçüde durulmadığı görülmüştür. Buradan hareketle, bu çalışma ile hizmet sektörüne ilişkin pazarlama performansı ölçümü alanında katkı oluşturmak amaçlanmaktadır. Bunun yanında, bankacılık sektörü oldukça rekabetçi bir yapıdadır. Bu nedenle, bankalar bu rekabet ortamında başarılı olabilmek adına pazarlama faaliyetleri anlamında son derece aktif şekilde hareket etmektedirler. Özellikle, pazarlama bütçeleri dikkate alındığında bütçelerin oldukça yüksek miktarlara çıktığı görülmektedir. Bu nedenle, bu bütçelerin en etkili pazarlama stratejisine uygun olarak oldukça dikkatli şekilde, uzun vadeli bir bakış açısıyla yönetilmeleri gerekmektedir. Son olarak ise, pazarlama literatüründe pazarlama verimlilik zinciri konusunda yapılmış farklı çalışmalar yer almaktadır. Ancak, bankacılık sektörünü konu alan pazarlama kaynaklarından firma performansına uzanan geniş bir çerçevede değerlendirme yapan çalışmaya rastlanmamıştır. Bu açıdan, bu çalışma hizmet pazarlaması alanında farklı bir bakış açısı sunan bir çalışma olmayı amaçlamaktadır.

Çalışma iki ana adımdan oluşmaktadır. İlk adımda beş farklı banka yöneticisiyle ön görüşmeler yapılarak modelde yer verilecek pazarlama kaynakları belirlenmiştir. İkinci adım ise, panel veriye dayalı analizlerden oluşmaktadır. Çalışmanın panel veri analizine dayalı ampirik bölümü için kullanılan veriler 2012-2015 yılları için çeyrek dönemlik periyotları kapsamaktadır. İlgili veriler, temel olarak üç kaynaktan sağlanmıştır. Bunlar; GfK Türkiye, Nielsen Türkiye ve Türkiye Bankalar Birliği şeklindedir. Veriler analize sokulmadan önce tüm veriler araştırmacı tarafından çeşitli

şekillerde işlenerek, analizlerde kullanılabilecek şekilde konsolide edilmiştir. Analizler toplam 4 adımda gerçekleştirilmiştir. İlk adımda tüketici temelli marka değeri değişkenini oluşturmak için SPSS 20 programında Faktör analizi uygulanmıştır. Diğer adımlardaki testlerin hepsi için EViews 20 programı kullanılmıştır. İlk adımın ardından unit root test yapılarak değişkenlerin zamanla değişip değişmedikleri kontrol edilmiştir. Bir sonraki adımda ise, panel data regresyon yöntemi ile değişkenler arasındaki uzun dönem ve kısa dönem ilişkileri açıklayan katsayılarla ulaşılmıştır. Son adımda ise, Wald test ile uzun dönem katsayıların anlamlılık dereceleri belirlenmiştir.

Sonuçlar pazarlama kaynaklarının ve pazarlama aktivitelerinin tüketici temelli marka değeri ve firma performansı üzerinde kısa ve uzun vadeli etkilerinin değişkenlik gösterdiğini ortaya koymaktadır. Söz konusu bu değişkenlikler gerek ilişkinin yönü ile, gerekse de ilişkinin anlamlı olup olmaması ile ilgili olarak ortaya çıkmaktadır. Edinilen bu bilgi pazarlama kaynakları ve pazarlama aktivitelerine yönelik bir pazarlama stratejisi oluştururken önemli katkı sağlayacaktır. Sonuçların teyit ettiği bir diğer nokta ise, tüketici temelli marka değerinin, banka performansı üzerinde en etkili faktörlerden biri olduğudur. Bu nedenle, bankaların marka değerini artırmaya yönelik yaptıkları çalışmalar oldukça önemlidir. Ek olarak, fiyatlama stratejisi ve banka şubelerinin sayısı banka performans değişkenleri üzerinde en etkili değişkenler arasında yer almıştır. Ayrıca, sonuçlar farklı reklam mecralarının tüketici temelli marka değeri ve firma performansı üzerinde farklı etkileri olduğunu göstermektedir. Etki yönleri ve seviyeleri performans kriterlerine göre değişkenlik göstermekle birlikte, sinema reklamlarının bu çalışma kapsamındaki performans kriterleri üzerinde bankacılık sektörü için en etkili kanallardan biri olduğunu söylemek mümkündür.

Özet olarak, bu çalışma bankacılık sektörü için banka performansı ve bankanın marka değeri üzerinde rol oynayan pazarlama kaynakları ve pazarlama aktivitelerinin uzun dönem ve kısa dönem etkilerini açıklamak yönünde katkı sağlamaktadır. Bu katkı bankaların doğru pazarlama karması ile doğru pazarlama stratejileri geliştirmelerine yardımcı olacaktır. Ayrıca, pazarlama kaynakları ve pazarlama aktivitelerinin etkilerine yönelik sahip olunan bu bilgi pazarlama bütçesinin de başarılı bir şekilde yönetilmesine olanak tanıyacaktır. Dolayısıyla, bu çalışma pazarlama stratejisi oluşturmaya yönelik kapsamlı bir bakış açısı sunmaktadır. Bu yönleriyle, çalışma gerek akademik alanda araştırmacılara, gerekse uygulama alanında pazarlama yöneticilerine katkı sağlayacak özellikler taşımaktadır.



1. INTRODUCTION

Companies invest a huge volume of the budget in marketing efforts in order to increase their brand performance and therefore gain long-term financial benefits. However, there were not enough tools to properly assess the marketing performance. Hence, the companies could not clearly define the return on their marketing investments. Therefore, marketing literature has focused especially after 2000s in marketing assessment topic to establish new approaches for marketing performance assessment. Thus, these tools can be used for developing marketing strategies which can enhance brand performance and marketing productivity.

In fact, the concerns about marketing assessment are not new. Already in the nineteenth century, a US retailer John Wanamaker said that that “half the money I spend on advertising is wasted, the trouble is I don’t know which half.” Hence, it would be not wrong to say that for a long time the marketing investments are made blindly. But later, these concerns started to get larger coverage in marketing literature in 1960s (e.g. Feder, 1965). After the conceptual development of marketing performance assessment became visible after mid 1960s and 1970s (e.g. Sevin, 1965; Kotler et al. 1977), the interest to this topic has increased by different researchers. The source of the discussions related to the concerns of the marketing assessment is mainly due to the bad image of marketing professionals, that they love to spend money, but when it comes to assessing the outcome of this spending, then they hate it (Adler, 1967). Hence, the inability of marketing performance assessment caused the debates regarding low marketing accountability.

The perception of low accountability certainly created negative consequences for marketing both as a discipline and as a practice. Most notably, it has caused a decrease of the marketing credibility. Hence, the decreased credibility threatened the status of the marketing department in the organization and caused a loss of marketing department power versus the other departments of the organization (Webster et al., 2005). Indeed, Webster et al. (2005) noticed that marketing’s impact is higher in the firms where there are clear tools showing its contribution to the business performance. Obviously, the performance assessment ability builds up the credibility of the

marketing department. In addition, there is no doubt that the proper performance assessment ability plays a critical role to retrieve marketing success of the companies. As quoted by Peter Drucker “you can’t manage what you don’t measure” (McAfee and Brynjolfsson, 2012, p. 4), the prerequisite of management first starts with the assessment of the actual situation. Only after determining the strengths and weaknesses, the correct actions can be taken. Therefore, marketing researchers, as well as marketing professionals, have started to develop the tools which can be employed to enhance accountability of marketing by confirming and displaying the contribution of marketing to the business performance (e.g. Morgan, 2012; Rust et al., 2004; Gupta and Zeithalm, 2006; Srinivasan et al., 2010).

The tools developed for marketing performance assessment should display the direct linkages between marketing efforts and the perceptual, attitudinal, and behavioral responses of customers and financial performance (Petersen et al., 2009). However, this can only be provided by using the appropriate marketing metrics. The different types of metrics including financial and non-financial have been developed to assess the marketing decisions (Chendall and Langfield-Smith, 2007; Lehmann, 2004). These marketing metrics have two main functions (Petersen et al., 2009). On one hand, these metrics enhance the marketing accountability by justifying the marketing expenditures and the marketing resources (Rust et al., 2004b). On the other hand, these marketing metrics provide the insight about the drivers which are effective on the customer value and firm value to the marketing professionals. Hence, the marketing strategy can be shaped accordingly with the aim to enhance the business performance and financial outcome (Petersen et al., 2009). Consequently, the researchers use metric portfolios consisting of both financial and non-financial metrics. Especially, after the emergence of service marketing, the importance of non-financial metrics has dramatically increased due to their ability to assess customer-based and long-term predictions of marketing performance (Chendall and Langfield-Smith, 2007). Hence, a perfect marketing portfolio employed in a proper marketing assessment system becomes a magnificent tool which sheds the light on the correct examination of return on marketing investment.

In addition to the assessment systems starting with marketing efforts and resulting in financial performance through customer value parameters (Keller and Lehmann, 2003), there are some other approaches incorporating marketing resources in this chain

(Morgan, 2012; Katsikeas et al., 2016). Such systems provide the ability to evaluate the success of the marketing also from the marketing resources point of view and conclude whether allocation of resources to marketing are efficient or not. Hence, such assessment systems approach the marketing function from a broader view where the marketing efforts can be examined with its related resources. Thus, such an evaluation would provide enhanced interpretation capability for the marketing researchers and marketing professionals where they can assess marketing function with its antecedents and consequences as a whole system.

To sum up, marketing has suffered from poor assessment capacity for a long time. But, in the last two decades, there are significant advances in marketing assessment literature with the support of Marketing Science Institute who identified marketing metrics and marketing productivity as one of its top research priorities. As a result of all these efforts, today marketing performance can be assessed with quite sophisticated methods which can establish great guidelines for strategic marketing plans.

1.1 Purpose of the Study

Gaining a sustainable competitive advantage is very important for majority of companies in today's highly turbulent market environment. Undoubtedly, understanding the interrelationships between marketing activities and business performance is one of the key priorities of the management teams of those companies. In addition, as Dekimpe et al. (2006) state that long-run market response is also a very important input for the companies putting effort on establishing a sustainable competitive advantage since the long-run approach stands in the central point of the marketing strategy. Therefore, a long-term perspective adds value to the studies which are related to marketing strategy. Hence, a proper marketing performance assessment holding these aspects is one of the key essentials for achieving the competitive advantage which in turn enables the firms to be able to attack their competitors with the effective marketing strategies.

Along with generating the market success, the need for a proper marketing assessment stems from some other reasons as mentioned above. First, marketers need to fully figure out the relationships between marketing actions and their commercial and financial outcomes where this insight will be used in the creation of the strategic marketing plan. With the contributions of all these insights, the marketing plan can be

accurately created. Second, the marketing professionals need to justify marketing budget in order to gain accountability for marketing which can enable the establishment of a marketing-finance interface. This will positively impact the stature of marketing department in the organization. Finally, the marketing performance assessment should take into consideration that the marketing activities first evolve the consumer mind. Because, only after the consumer mind is shaped based on the marketing efforts, the business performance appears as an outcome of this impact. Therefore; understanding the influence of marketing actions on consumer mind during the whole marketing performance assessment process is very crucial, as Kotler (2003) claimed that “companies that make steady gains in mind share and heart share will inevitably make gains in market share and profitability”. Hence, understanding of the black box of customer minds creates a significant difference in the success of marketing performance. In fact, there are several studies approaching marketing performance from different perspectives. Many of these studies in the marketing literature have concentrated on examining the direct relationship between marketing actions and company’s market performance (Lehmann, 2004; Srinivasan and Hanssens, 2009). However, there are calls to add the mediating measures related to customer perceptions, attitudes, and intentions from some researchers (e.g. Gupta and Zeithalm, 2006). In addition, Marketing Science Institute also announced marketing performance measurement among the top research priorities in several years and place this topic as a top research priority for 2008-2010 (O’Sullivan and Abela, 2007; Lamberti and Noci, 2010).

In the light of these motives, the aim of the study is to examine the impact of the marketing resources and the marketing activities on the business performance indicators through customer-based brand equity. Hence, the empirical part of this study presents a model representing a marketing productivity chain starting from resources and marketing activities and ending with business performance indicators. With this approach, this model aims to provide a deep insight regarding the effects of marketing actions both from a short-term and long-term perspectives. With these goals, the expected contributions of this study are as follows. First, this study presents a tool which can be used in the creation of the most effective marketing mix consisting of the appropriate marketing tools. Hence, a perfect marketing mix can be established. Second, the right level of marketing budget with proper allocation for each marketing

activity can be constituted with the help of this model. Hence, this model will contribute to the management of the marketing budget which can be improved with proper budget allocation decisions for each of the marketing activities. Most importantly, this model aims to help building the right marketing strategy and contribute the success of this strategy.

1.2 Significance of the Study

As mentioned above, marketing performance assessment topic has become one of the popular research areas especially since 2000s. Thus, it has attracted attentions from academics as well as from practice. As a result of this interest, there are various studies in the marketing performance assessment literature. However, this study varies from the other studies by some aspects.

The main contribution of this study is that this empirical study explains the linkage between marketing efforts, marketing resources and business performance in a service sector, by incorporating the customer-based brand equity in this relationship. The goods-dominant sectors are the sectors which are generally preferred in the marketing performance studies. However, service sector is not commonly examined. From this perspective, this study provides a comprehensive perspective for the impact of the marketing efforts and marketing resources on the customer perception as well as on the business performance, shedding light on the dynamics of the service sector. In addition, the customer perceptions are not frequently used in the studies of marketing performance, rather the direct linkages between marketing efforts and the business performance are examined. However, without understanding the customer perceptions and feelings which are occurred as a result of the marketing efforts and leading to the business performance, the relation between marketing efforts and the business performance could not be fully explained. Based on this assumption, this study develops a model incorporating the customer-based indicators which are aggregated under the variable of the customer-based brand equity in the model. In addition, due to the difficulty of the data accessibility, there are limited number of panel studies which are generally based on single performance indicator. As a result, the lack of the data richness narrows down the conclusions of the outcomes of the studies examining limited number of indicators in a limited time-line. From this point of view, this study is based on panel data including long-run, multi-dimensional business performance

indicators. Hence, this study provides a broad approach to the performance of the marketing. Accordingly, this study can act as a guiding tool for the development of the marketing strategy. Finally, this study sheds light on one of the biggest and most important sectors in Turkey by focusing on the dynamics of banking sector. Thus, the study adopts a comprehensive outlook explaining the relationship between marketing resources, marketing efforts and business performance of the biggest banks in Turkey through the customer-based brand equity. With this approach, this study aims to make several contributions to the marketing performance literature.

1.3 Organization of the Study

The study consists of 11 phases.

1. Literature review on the marketing performance and its assessment: This phase is applied to review the marketing performance literature based on the previous studies. Hence, this phase provided the insights to define the scope of this study.
2. Literature review on the resources and capabilities: This phase is applied to review the literature of the resources and capabilities. Hence, this phase contributed to define the marketing resources used in the model.
3. Literature review on the marketing performance metrics: This phase is applied to review the literature of the marketing related performance metrics. Hence, this phase contributed to define the business performance metrics in the model.
4. Literature review on linking marketing and business performance: This phase is applied to review the literature regarding the previous models linking marketing activities and business performance. Hence, this phase contributed to define the scope of this study.
5. Preliminary Study (Individual interviews with senior managers of the banks): The individual interviews are conducted with senior managers of five banks to get the opinions and preferences of them regarding the availability of the data which is needed to apply the empirical part of the study.
6. Development of the model: The model is developed based on the literature review and the individual interviews with the senior managers of the banks.
7. Data Collection: The panel data for the proposed model is collected from three main sources; namely, GfK Turkey, Nielsen Turkey, and the Bank Association of Turkey for the period of 2012-2015, in a quarterly basis.

8. Data Processing and Consolidation: The data obtained from different sources is processed and consolidated by the researcher according to the requirements of the analyses.

9. Main Study (Analyses): SPSS 20 and EViews 9 are used for the execution of the analyses.

10. Results and Discussions: The findings of the analyses are discussed.

11. Conclusion and Suggestions: Managerial implications, future research directions, and the limitations of the study are discussed with the conclusion of the study.





2. MARKETING PERFORMANCE AND ITS ASSESSMENT

2.1 The Role of Marketing

The concept of marketing has been discussed since marketing has emerged as a separate discipline. These discussions result in various definitions each of which tries to cover the meaning of the concept according to different perspectives covering new contexts, new technologies, and new techniques (Gamble et al., 2011).

At first, the marketing domain mainly concentrated in the distribution and exchange of goods (Marshall, 1927; Shaw, 1912; Smith, 1904) and stayed as a central construct in marketing for several decades (Alderson, 1957; Bagozzi, 1975; Houston and Gassenheimer, 1987; Hunt, 1976; Kotler and Levy 1969). Coming to 1950s, with the impact of marketing management school, a decision-making approach and customer focus became important (Drucker, 1954; Levitt, 1960; McKitterick, 1957). This decision-making approach aims to satisfy the customers at a profit and to make decisions on the marketing mix or the “4P’s”. In the 1970s, Kotler stated that (Kotler, 1972) “marketing management seeks to determine the settings of the company’s marketing decision variables that will maximize the company’s objective(s) in the light of the expected behavior of noncontrollable demand variables” (p.42). In addition, in early 1970s, two schools of service marketing research emerged in Europe, in Nordic countries (Grönroos and Gummesson, 1985) and in France (Eiglier and Langeard, 1976; Langeard and Eiglier, 1987). Both of these schools claim that a new marketing perspective is needed (Grönroos, 2006). In the 1980s, new approaches started to appear which are not based on the 4P’s such as relationship marketing, quality management, market orientation, supply and value chain management, resource management, and networks. In addition to these fields of study, the emergence of services marketing as a subdiscipline can be defined as the most remarkable development at these times. The focus of these scholars has moved from product marketing to the topic of services marketing (Dixon, 1990). At the end of the 1990s, Day and Montgomery (1999) state that the 4P’s are now considered as a handy framework as it is not able to see marketing as an innovative and adaptive power. By the beginning of 2000s, Sheth and Parvatiyar

(2000) stated that marketing needs a new paradigm which is based on the relationships of the players in the market. With this claim, they indicate that exchange theory is given up. With all these calls, marketing has moved its focus from the exchange of tangible goods toward the exchange of intangibles, skills and knowledge, and processes which combines goods and services. That means marketing has shifted from a goods-dominant view to a service-dominant view where the intangibles, exchange processes, and relationships are creating the focus of the domain (Vargo and Lusch, 2004). Vargo and Lusch (2004) emphasizes that service is the “fundamental basis of exchange” and is crucial for the activities between markets and the society (Gamble et al., 2011). The view which considers marketing less as a function and more as a set of values and processes has led to a rise in the influence of marketing (Greyser, 1997). Emphasizing the importance of marketing, McKenna (1991) stated that “marketing is everything and everything is marketing” (p.68).

After the study of Vargo and Lusch (2004), the debates started about the contributions of service-dominant logic in marketing. The main outcome in these discussions concludes that service is a perspective on value creation (Edvardsson et al., 2005). Value creation for customers has started to create interest in the management and marketing literature during 1990s and continuing into the 2000s. According to the view of service-dominant logic, the value is not created by the provider, but in the customers’ value-generating processes (Grönroos, 2000). At this point, interaction is the core construct where the firm co-creates value with its customers. That means the application of a service logic enables the firm to gain opportunities to directly contribute to the value fulfillment for its customers (Grönroos, 2008). In the same direction, the Nordic school claims that these interactions affect the customer preferences and customers participate as co-producers in the service production process (Eiglier and Langeard, 1976; Grönroos, 1978; Gummesson, 1979). The service dominant logic of Vargo and Lusch (2004) and the Nordic school basically have many aspects in common, but the differences mainly are coming from the fact that the view of the Nordic school is based on the studies of the services in their marketing context, whereas the service- dominant logic pioneered by Vargo and Lusch (2004) is based on a study examining how the service concept is interpreted in classic economic theory (Vargo and Lusch, 2004; Vargo and Morgan, 2005).

With the change in the definition of marketing which shifts its focus from goods-dominant logic to a service dominant logic, the importance of the customer impact in the value creation process created attention. This resulted in the interest to find the answer to the questions “what does customer think and feel?”, “what does customer do?”, and “what is the financial consequence?”. Obviously, these questions need clear examinations to find the concrete answers. In addition to the concerns about understanding the black box of the customers, the discussions about the decreasing role of marketing department gain increasing coverage in marketing literature in 2000s. This is mainly a consequence of low accountability perception of marketing which requires marketing to be more credible. All these needs lead to the result that the marketing performance assessment topic gains a well-deserved attention.

2.2 The Definition of Marketing Performance

While marketing literature has given relatively more space to the studies related to the marketing concept, the studies related to marketing performance stayed comparably limited. However; marketing performance needs to be examined in a more detailed manner due to its significant consequences. A proper performance track in marketing will lead to revolutionary results in business performance.

Organizational performance topic emerged stemming from several views approaching the topic from different perspectives. Ford and Schellenberg (1982) claim that organizational performance can be examined from three perspectives. These are goal approach (Etzioni, 1964), systems resource approach (Yuchtman and Seashore, 1967), and process approach (Steers, 1977). The goal approach focuses on the accomplishment of the targeted objectives. On the other hand, the resource system approach is based on the improvement of the association between the organization and its environment in order to protect the related resources. The process approach concentrates on the manner of the elements leading to the performance. In addition, Pimenta da Gama (2011) defines performance from an organizational perspective and emphasizes its four requirements; namely, measurable, dynamic, relative, and multidimensional. It is measurable since the concept is not only theoretical but can be quantified; it is dynamic since the concept is not stable but changing; it is relative since there is always a benchmark to define the performance result relative to it; and it is

multidimensional since performance measurement can be applied to different methods and different measures.

Even though there are various conceptualizations for the organizational performance, the concept of marketing performance does not have diverse conceptualizations as Bonoma and Clark (1988) stated “perhaps no other concept in marketing’s short history has proven as stubbornly resistant to conceptualization, definition, or application as that of marketing performance” (p. 1). A clear definition of marketing performance comes from Homburg et al. (2007) indicating marketing performance as “the effectiveness and efficiency of an organization’s marketing activities with regard to market-related goals, such as revenues, growth, and market share” (p. 21). With this definition, the authors adopt a goal perspective to the concept of marketing performance. Despite the lack of the richness of the marketing performance conceptualizations and definitions, marketing performance research actually started in 1960s (Feder, 1965). From this time onwards, several studies examined the concept of marketing performance management with a detailed examination of the assessment of marketing performance.

Marketing performance management is the process of maintaining the marketing efficiency while a combination of human resources and several procedures are used in order to reach the defined targets (Patterson, 2007). Performance management process covers both performance measurement activities and other categories of performance management actions to develop the marketing performance (Mone et al., 2013). These actions include planning, implementation, and monitoring functions. The monitoring functions constitute the processes covered by marketing performance assessment. In this sense, marketing performance assessment is a phase of performance management process with a clear focus on the comparison of performance outcomes with performance benchmarks (Brudan, 2010).

2.3 The Importance of Marketing Performance

The concept of marketing performance is crucial due to significant implications of the performance outcomes; therefore, the assessment of marketing performance constitutes an important place in the marketing performance literature. The studies conducted in this area are based on the belief that marketing accountability holds critical importance. In other words, marketing needs to be able to display its

contributions which add value to the firm and to the society (Sevin, 1965) with its accountability. This contribution of marketing can be expressed through return on marketing which is defined as “the revenue or margin generated by a marketing program divided by the cost of that program at a given risk level” (Powell, 2002, p. 6). This definition of return on marketing is based on a financial perspective, as return on marketing is a financial metric. Stewart (2009) claims that marketing accountability needs to have a financial view. This is because the common language in a company is financial, and therefore the evaluations and comparisons are made based on financial metrics. In addition, the resulted outcomes of a marketing mix can be evaluated through the financial metrics (Stewart, 2008). Consequently, with the increased marketing accountability, decisions will be taken more correctly based on financial metrics. This will result in an improved level of the business performance. Meanwhile, this will also contribute to the marketing’s position in the company in a positive way (e.g. Rust et al., 2004a) as being more accountable, and marketing department will gain more attention for the strategic decisions.

One of the main goals of marketing assessment is to validate the marketing practices to the management of the organization (Clark et al., 2004). There are constant debates challenging marketing to justify its investments and to show the relationship between marketing investments and the marketing performance. These claims attracted the researchers to the examination of the marketing metrics and the relationships between each other (e.g. Morgan et al., 2002; Lehmann, 2004; Morgan, 2012; Rust et al., 2004a; O’Sullivan and Abela, 2007). With these efforts, the positive relationship between marketing investment and the business performance can be shown as mentioned by Rao and Bharadwaj (2008). They state that as the marketing investments increase, the shareholder value improves accordingly in a positive way.

Another point is that marketing performance assessment highly contributes to the market learning. It provides insights regarding the progress in the market (Argyris and Schon, 1978) and the information about the results of the marketing actions (Clark et al., 2004). When making decisions, it is very helpful that a system guides the marketing strategy regarding the crucial factors and the decisions according to them (Van Bruggen et al., 1998). It provides superiority in marketing performance, supported by the quote “what gets measured gets done” in the literature (Ouchi, 1979). This consequence relies on detecting the weaknesses and taking appropriate actions for

further improvements accordingly which results in enhanced marketing performance. As time goes on and measurement abilities of the organization improve, the information gathered through the measurement practices will improve and this leads to superior decisions and organizational sources to be used in an improved manner (Clark et al., 2004). As stated by Pimenta da Gama (2011), in order to realize the marketing goals and business objectives, organizations need to have an effective and efficient application of marketing coupled with performance assessment. Improving marketing performance, on one hand, this assessment creates significant positive effects on business performance with appropriate implementation on the other hand (Rust et al., 2004a, Morgan et al., 2002; Morgan, 2012). Hence, marketing performance assessment is an important component of the marketing information (Menon and Varadarajan, 1992) and the learning process (Morgan et al., 2002). From a general perspective, learning approach delivers overall performance (Baker and Sinkula, 1999). As Pimenta da Gama (2011) claims, to compete in a highly turbulent market, organizations should give priority to implement marketing assessment. In addition, the sustainability of these assessments is definitely another important success factor since a continuous track of marketing performance provides a consistent control and therefore sustainability of business performance.

According to Srivastava et al. (1998), without a structured system linking marketing and finance, the assessment of the marketing activities seems hard to apply. With the lack of a measurement system, the investments made for the marketing actions would remain limited without the evaluation of these actions. This will in turn negatively impact the value generation for the shareholder with the assumption that the value for the organization is mainly created by intangible assets, rather than tangible ones (Srivastava et al., 1998). Therefore, understanding the budgets and the resulted actions is important for the evaluation of the effects of marketing actions (Sevin, 1965). Marketing employs sources of the organization, in return, the management of the organization needs to be informed regarding the return on the investments made (Clark et al., 2004). As financial perspective is crucial in organizational management, marketing should enrich itself with measurements and reports creating linkages with the financial approach and creating accountability through justifying the results with numbers (Bodell and Earle, 2004).

However; organizational learning does not lead to favorable results in all conditions (Huber, 1991). According to the research, the business performance improves the capability to properly evaluate the increases in marketing performance (O'Sullivan et al., 2009). Hence, the prerequisite is a reliable learning mechanism and reliable information gathered through it; so, the organizational attitude is shaped according to the outcome (Clark et al., 2006).

2.4 Dimensions of Marketing Performance

Marketing performance concept is defined by three dimensions in marketing literature. These dimensions are efficiency, effectiveness, and adaptability (Bonoma and Clark, 1988; Clark, 2000; Sheth and Sisodia, 1995; Walker and Ruekert, 1987). Effectiveness means the level to which an organization realizes its targets. Efficiency, on the other hand, is the linkage between the outputs and the inputs to achieve these targets. Adaptability is the organizational capability to react to the environmental deviations and changes (Walker and Ruekert, 1987; Bonoma and Clark, 1988; Katsikeas and Morgan, 1998). According to the literature, these dimensions may not be maximized at the same time because of the trade-offs between them (Bhargava et al., 1994). Hence, normative models for marketing performance assessment need to permit the performance evaluation of efficiency, effectiveness, and adaptability point of views through the marketing performance process (Morgan et al., 2002).

2.4.1 Efficiency

The efficiency of marketing is one of the significant fields in marketing performance assessment (Clark, 2000). Efficiency is defined as the relation of the marketing outputs versus the marketing inputs (Bonoma and Clark, 1988). The aim in this relation is to increase the outputs compared to the inputs. From the calculation point of view, efficiency is defined as the ratio of outputs compared to inputs; hence, return on investment measures constitute an example for a measure of efficiency (Lenskold, 2002). In addition, marketing productivity is also an efficiency approach which aims to gather the highest output with assigning the marketing actions accordingly (Clark, 2000).

Different researchers approach with similar definitions to the concept of efficiency. Walker and Ruekert (1987) defined efficiency as “the outcome of a business program

in relation to the resources employed” (p.19) offering return on investment as a metric. Bonoma and Clark (1988) defined efficiency as the volume of the effort compared to the outcome by highlighting the consistency of a marketing plan with organization’s marketing architecture. The plainest definition for efficiency comes from Drucker (1974) as “doing things right”. As it can be seen from the definitions, the researchers have the same approaches to the concept of efficiency.

2.4.2 Effectiveness

Effectiveness is the other dimension of marketing performance. It has attracted less attention than efficiency (Bonoma and Clark, 1988; Sheth and Sisodia, 1995). According to effectiveness perspective, the aim of an organization is to accomplish a defined set of goals (Cyert and March, 1963). From this point of view, the measure of the effectiveness refers to the objectives which are set to be achieved (Katsikeas and Morgan, 1998). Among different approaches to the concept of effectiveness, Clark et al. (2006) claim that the ratio of the outcomes compared to the targeted results is a measure for effectiveness (Clark et al., 2006). Walker and Ruekert (1987), on the other hand, identified effectiveness as the gain against the rivals. Drucker (1974) defined effectiveness simply as “doing the right things”. Hence, the effectiveness concept always takes a benchmark measure to define the success.

Related to the comparison between effectiveness and efficiency approaches, Clark and Ambler (2001) state that the organizations where the consciousness of the relationship between intermediary objectives and financial results increases, allocate more importance to effectiveness compared to efficiency. From this point of view, obtaining the targeted outcome is more crucial than the expenditure made to obtain it (Clark and Ambler, 2001).

2.4.3 Adaptability

Walker and Ruekert (1987) included adaptability within the three dimensions of performance. They define adaptability as the organizations’ ability to adjust itself according to the dynamic terms of the environment. Hence, adaptability gains more importance in a turbulent environment. Also, strategy literature emphasizes the importance of adaptability. It suggests that the realization of the organizational objectives is enhanced when the organizational strategy matches with the environment (Lambkin and Day, 1989). In a multidimensional environment, the task of the

marketing management is to create the strategy of the organization according to the environmental dynamics (Clark, 2000). This approach will, in turn, provide favorable returns from the environment. Obviously, the strategies, which are suitable according to the environmental conditions, are more likely to lead to the successful results.

2.5 Marketing Performance Assessment Systems

Clark and Ambler (2001) define marketing performance assessment as the evaluation of “the relationship between marketing activities and business performance” (p. 231). Marketing performance assessment topic dates back to earlier times (e.g. Feder, 1965). Especially, the organizations, where marketing expenditures need to be watched, have given higher importance (e.g. Sheth and Sisodia, 1995). Although the first studies already started discussing the topic (e.g. Sevin, 1965; Kotler et al., 1977), the advances in marketing performance assessment area in academic environment remained limited until the beginning of 2000s (Sheth and Sisodia, 1995, Clark, 1999). But, after 2000s, there is a visible increase in the interest to the marketing performance measurement in the literature (e.g. Rust et al., 2004a; Homburg et al., 2012; O’Sullivan et al., 2009; Lamberti and Noci, 2010; Clark et al., 2006; Gao, 2010; Ambler and Roberts, 2008; Ambler et al., 2004; O’Sullivan et al., 2009).

The interest in marketing performance assessment resulted from several reasons. The first reason is the appetite of the firms to increase their profits by concentrating on marketing in order to gain increased sales and growth (Sheth and Sisodia, 1995). As these assessments enable the firms to see the results of the marketing activities more consciously, they can take proper actions accordingly which ultimately leads to improvement in business performance. The second reason is that the shareholders are more keen on reviewing the outcome of the marketing activities (Mavrinac and Siesfeld, 1997). Having invested in the marketing actions, the shareholders want to have these expenses to be justified and see them to be paid off for the targeted results. On the other hand, the third reason is that the debate regarding the marketing metrics which appealed to the researchers with new concepts of marketing performance assessment. With these discussions, researchers start to propose different methods. The fourth reason is the lack of the appropriate marketing metrics which obligate marketing professionals find new ones which are able to show the deserved value of marketing (e.g. Marketing Science Institute, 1998). Hence, related to the studies of marketing

performance assessment, many studies have attempted to propose different metrics indicating marketing importance (e.g. Ambler et al., 2004; O'Sullivan and Abela, 2007; Clark, 2000; Rust et al., 2004a). The studies also show that the marketing performance assessment practices might produce behavioral outcomes for the firms where the firms can shape their behavior in the market (Greve, 1998). This means that the results of the assessments evolve from results to real actions for the firms.

In the context of marketing performance assessment, there are different approaches in terms of the marketing performance assessment systems. Marketing performance assessment systems can be defined as a kind of a control mechanism (Anthony, 1988). They include rules in order to manage the objectives of the organization (Jaworski, 1988). Therefore, these systems are important elements in marketing-oriented organizations. While holding the rules for the achievement of the objectives, these systems maintain some basic tasks. Lamberti and Noci (2010) conclude the main tasks of performance management systems with highlights. As a primary task, such a system controls the execution of the planned strategy. This kind of a control mechanism makes sure that the planned strategy is implemented properly according to the initial scenario. In addition, in order to realize the plans, the objectives need to be disseminated appropriately within the organization. Hence, such a system makes the right distribution of the objectives and tracks the actual performance versus the initially defined targets. In addition, it can happen that the initially defined strategy does not fit to the current needs of the organization anymore, and it has to be adjusted according to the new circumstances. Therefore; while checking the performance results, such a performance assessment system constantly confirms whether the strategy is still reasonable. Finally, such a system enables individual as well as organizational advancement accompanied with all the actions for further improvements.

Based on the tasks mentioned above, a marketing performance assessment system differs from a performance assessment system. Based on the main attributes of performance assessment systems, a marketing performance assessment system is characterized by determinants which focus directly on marketing activity (Lamberti and Noci, 2010). This means that, in marketing performance assessment systems, the assessed performances are under the category of marketing activities, and the metrics used for the evaluations are marketing metrics. In addition, the evaluation methods might change according to different departments in the organizations. Therefore, the

assessment techniques and the way the practitioners use the data coming from the system, are based on the concept of marketing in such a marketing performance assessment system.

The assessment process has a structured flow. It consists of four stages (Morgan et al., 2002). It starts with the determination of the performance benchmark for the related parameter. The performance benchmark is the level which the firms want to achieve in terms of the defined parameter. After determination of the benchmark, the actual performance needs to be identified. The identification of the actual performance might need some analyses to catch the right reflection of the business performance. This stage will be followed by the comparison of the actual data with the performance benchmark. This comparison will show the actual level of the current performance versus the targeted benchmark. The final stage is taking the appropriate actions based on the insights gained through the benchmark process. These actions are formed according to the actual situation and cover the necessary contingency actions in order to achieve the performance benchmark (Goold and Quinn, 1990). The best-known performance assessment system is Balanced Scorecard which originated from the mission and vision of the organization and shaped according to the goals of the organization (Kaplan and Norton, 2001). With this system, the actual performance is benchmarked with the performance standards, and actions are formulated accordingly. This means that such a system covers both strategic and also tactical actions.

Marketing assessment systems provide several benefits for the organization. They help the organization to cross check being in line with the industry standards (Petty, 1997), so that the organization can take actions accordingly and adjust itself according to the required industry levels. Also, these systems provide constant track and therefore catch the problematic issues earlier (Schibrowsky and Lapidus, 1994). This helps for an early detection and enables to solve the problem before getting more challenging. In addition, marketing assessment systems ease decision making process with gathered information (Slater and Narver, 1995) in the analysis stages, so that the decisions are taken based on the real figures. Besides, these systems help the strategy formation and acting accordingly (Bonoma and Crittenden, 1988) as the long-term healthy strategy building can only be shaped after a proper assessment of the current performance has been realized. Finally, the marketing assessment systems prioritize marketing concerns for the management team of the organization (Govindarajan and Fisher, 1990), so that

the management team catches the priority of the needed actions and arrange its action list accordingly. Hence, with all their benefits, marketing assessment systems provide crucial contributions.

There are two approaches in marketing assessment systems (Morgan et al., 2002). These are normative systems and contextual systems (Blenkinsop and Burns, 1992).

2.5.1 Normative systems for marketing performance assessment

A normative marketing performance assessment system presents a common foundation for marketing performance process (Morgan et al., 2002). Such a system can be defined as a conceptual structure consisting of predefined marketing procedures which lead to the financial performance (e.g. Rust et al., 2004a; Morgan et al., 2002; Gupta and Zeithaml, 2006; Srinivasan et al., 2010; Morgan, 2012). From this perspective, these systems can be described as relatively rigid systems which only change with major process changes (Morgan et al., 2002).

Normative marketing performance assessment systems are crucial especially for marketing performance which has a dynamic (Dickson, 1996) and multidimensional characteristic (Bonoma and Clark, 1988). According to these aspects, there are several models constituted (e.g. Morgan, 2012; Katsikeas et al., 2016; Rust et al., 2004a). In these models, resources and capabilities lead to market performance and ultimately reach the financial performance as the outcome of the applied strategy. The model of Rust et al., (2004a) is an example of a normative system model. In their model, authors propose a chain of marketing productivity model which comprehends serial stages of marketing performance as customer impact, market impact, financial impact, and finally impact on the firm value. The idea behind the model is that marketing efforts create an impact on the market-based assets of the organization (Srivastava et al., 1998), accordingly affect market stand, financial stand, and ultimately the firm value.

2.5.2 Contextual systems for marketing performance assessment

According to the contextual point of view, marketing performance assessment systems are not a kind of a “one size fits all” control mechanisms. Rather, a contextual system considers the industry and firm specific needs and adjusts itself accordingly (Morgan et al., 2002). Hence, it can be said that the contextual systems are kind of normative systems which are shaped according to business contexts. From the contextual

perspective, the most effective marketing performance assessment system is described as the one which matches with the objectives, strategies, framework, and business context of an organization (Stathakopoulos, 1998) according to the contingency theory (Ruekert et al., 1985). From this point of view, the contextual systems take the common foundations and implement these foundations to specific business contexts according to their needs which might be affected by the different aspects such as industry, target market etc. (Morgan et al., 2002). Therefore, it can be concluded that contextual approaches express the business concerns of top management based on the industry standards (Ambler et al., 2004). Taking this dynamic approach of contextual systems, one can conclude that contextual systems are more adaptable than normative systems based on the changes in the strategy and the framework (Stathakopoulos, 1998).

The contextual approach of marketing assessment systems has been theoretically considered quite important and also took place in empirical work. In their study of UK firms, Ambler et al. (2004) discover that firm size and the business sector are effective in the mix of metrics. In addition, Barwise and Farley (2004) observed considerable differences in the utilization of marketing metrics between US, Japan, Germany, UK, and France. Moreover, they also noticed that the larger firms use more metrics than the smaller firms. Hence, these empirical studies show that the contextual approach to marketing performance assessment deserves attention in practice (Frösen et al., 2013).

2.6 Marketing Performance Assessment

The researchers approach the marketing performance assessment topic from different perspectives. Morgan et al. (2002) conclude two main research streams in marketing performance assessment: marketing productivity analysis and marketing audit concept. Marketing productivity approach adopts efficiency approach, on the other hand, marketing audit concept uses effectiveness approach.

2.6.1 Marketing audit

A marketing audit is a stream implemented for marketing performance assessment and has emerged in an American Management Association report (AMA, 1959). It covers the studies of Crisp (1959), Sessions (1959), Shuchman (1959), and Oxenfeldt (1966). A marketing audit is defined as a comprehensive analysis of the whole marketing effort

including the goals, plans, human resources, and the organization (Shuchman, 1959) to apply the procedures and realize the targets.

Later, Kotler et al. (1977) brought a renewed approach to marketing audit. He defined it as regular and in-depth analysis of organization's goals, strategies, actions, and environment to scan the situation in terms of weaknesses and opportunities, and therefore being able to make recommendations in order to enhance organization's marketing performance. This model consists of six elements including 1) the marketing environment audit, which covers examination of environment, 2) the marketing strategy audit, to evaluate the marketing strategy to be in line with environmental advantages and disadvantages, 3) the marketing organization audit, to analyze the connection between marketing and sales organization, 4) the marketing system audit, to assess the processes designed in order to check marketing actions, 5) the productivity audit, to examine the financial data to obtain profit improvements, 6) the marketing function audit, to examine main marketing functions.

Marketing audit suggests a new perspective on marketing performance assessment topic. The considerable impact of the marketing audit concept is that it introduces the first systematic approach to marketing effectiveness (Kotler, 1977). But, it had also drawbacks from a usability point of view. The first barrier was that there were not enough capable auditors (Kotler et al., 1977). Thus, a restricted number of people could apply the audit properly. The second one was lack of management collaboration (Capella and Seckely, 1978), where the demand and enthusiasm are not at a high level. The third barrier was the lack of information accessibility (Rothe et al., 1997) due to limited channels to reach the information. The fourth one was the lack of efficient connection with high-level managers (Bonoma, 1985). As a result of all those drawbacks, marketing audit approach has come up with some conceptual criticism. First one is arguing that these systems are not engaged in the whole audit mechanism (e.g. Brownlie, 1993). Thus, the implementation area could not be expanded. In addition, these systems are criticized due to being regular applications but not continuing evaluations of marketing performance (Kotler et al., 1977). As sustainability of an implementation is a significant factor, this approach has failed in meeting this point. Another raised criticism is that the main goal of these systems is determining the problems without proposing a concrete solution for them (e.g. Wilson, 1980). From this perspective, the expectation from such a system is more than a

problem detection job, but to find a solution for them at the same time. Finally, the lack of experimental validity in audit systems caused another criticism emphasizing that they are mainly checking from a qualitative perspective lacking the information about measurement features such as validity and reliability (Rothe et al., 1997).

2.6.2 Marketing productivity

Marketing productivity deals with the input-output relation (Misterek et al., 1992). Based on this relation, there are two main contributions of marketing productivity approach to the marketing performance assessment. The first one is, that it brought efficiency approach to marketing performance (Morgan et al., 2002). It measures the efficiency based on the conversion between input and output (Sink, 1985). The other one is the detailed examination of the marketing expenses (e.g. Sevin, 1965) and returns (e.g. Feder, 1965). According to this perspective, the success of a marketing action is evaluated according to the level of the gains in return to the investment made for it.

After the study of Sevin (1965), two emerging approaches are recognized in marketing productivity approach. The first one is the tendency to use non-financial metrics as marketing output. The second one is the interest in the adaptability and innovativeness in productivity evaluations (e.g. Walker and Ruekert, 1987) with the inclusion of multidimensional metrics (Bhargava et al., 1994). Both of these new approaches in metric usage add value to the marketing performance assessment practices with new perspectives. The usage of non-financial and multidimensional metrics enriches the contents of the assessment. Hence, the application field of the assessments is enlarged, so that the outcomes of the assessment find the area of utilization for the health of the marketing performance.

However, according to Morgan et al. (2002), there are still some concerns about this approach threatening the usability. This approach is based on the assumption that inputs and outputs are accurately evaluated and not changed over the time. This perspective is hard to be confirmed especially for intangible inputs and outputs (e.g. Herremans and Ryans, 1995). In addition, from the conceptual point of view, the time lags between inputs and outputs are not taken into consideration in this approach which also makes it hard to separate the cumulative effects (Foster and Gupta, 1994). In addition, the assessments use quantitative value of inputs and outputs, rather than

qualitative ones (Morgan et al., 2002). This puts a limitation on the evaluation. Finally, marketing productivity approaches are mainly dealing with efficiency, but they fail using effectiveness and adaptiveness approaches (e.g. Richardson and Gordon, 1980). Hence, looking to the aspects of marketing productivity and marketing audits, it can be concluded that both approaches have drawbacks in terms of usability and conceptual framework preventing neither of the approaches as a perfect stream (Morgan et al., 2002).

2.7 Evolution of Marketing Performance Assessment Research

Marketing performance assessment is one of the remarkable topics in marketing for researchers from 1960s onwards (Rust et al., 2004a). Marketing performance assessment systems deliver evaluations regarding the marketing activities in terms of their results (Clark et al., 2006). These evaluations at the same time provide guidance for future directions for marketing (Slater and Narver, 1995; Morgan et al., 2002). This research area covers several conceptual inputs like marketing metrics (Gupta and Zeithaml, 2006; Farris et al., 2006; Kotler et al., 2009), marketing dashboards (Pauwels et al., 2009), marketing performance management systems (Ambler, 2003; Lamberti and Noci, 2010), and marketing productivity (Rust et al., 2004a). In addition to the researchers' interest, also practitioners are interested in these field of study (O'Sullivan, 2007).

When the history of marketing performance assessment is examined, marketing audit comes in the first place as one of the early developed concepts to evaluate the marketing effectiveness (Shuchman, 1959). After this method, marketing productivity approach attracted attention which focuses on the marketing efficiency (Sevin, 1965). Mainly, the studies of Sevin (1965) and Goodman (1972) constitute the origins of the studies related to marketing performance in this period. Along the time, the characteristics of the metrics which are used in the studies have changed in terms of their assessment coverage. The first studies in this field mainly use single financial metrics like sales and profit (Sevin, 1965; Day and Fahey, 1988). After the late 1970s and 1980s, the usage of multidimensional metrics has been employed to assess marketing performance (Clark, 1999). Then, the studies created in 1980s and 1990s start to include non-financial metrics such as market share (Szymanski et al., 1993), customer satisfaction (Piercy and Morgan, 1995), customer loyalty (Reichheld, 1994),

and brand equity (Aaker and Jacobson, 1994) in addition to financial metrics in the marketing performance studies. These metrics attracted attention with their power to explain the relationship between marketing activities and financial outputs (Ambler et al., 2004, Gupta and Zeithaml, 2006). With their chain of productivity model, Rust et al. (2004a) show how marketing activities result in the shareholder value of the firm. This model highlights that marketing efforts influence customer minds in the first place, and then their feelings and their behaviors change accordingly. Ultimately, financial performance occurs as a result of all these effects. When creating this chain of effects, the marketing performance measurement research includes the most appropriate metrics to assess the relationship between marketing and organizational business performance (e.g. Clark and Ambler 2001).

O'Sullivan and Abela (2007) claim that the marketing performance measurement research can be examined in three research periods. These include marketing productivity measurement (Morgan et al., 2002; Rust et al., 2004b), determination of measures (Barwise and Farley, 2004), and brand equity measurement (Aaker and Jacobson 2001). On the other hand, Clark and Ambler (2001) divided marketing performance research into four periods as measuring marketing productivity, measuring output by non-financial measures, measuring market orientation, and measuring market-based assets with the highlights of the respective periods. These two approaches have both common and different points. In the section below the approach of Clark and Ambler (2001) will be examined in more detail.

2.7.1 Measuring marketing productivity

Starting with the first studies through the 1970s, many of the marketing performance studies focused on marketing productivity (Clark and Ambler, 2001). This approach defines the contribution of marketing with the examination of the output compared to the input. According to this approach, the aim should be to increase the outputs relative to inputs as much as possible. Hence, the studies in this research stream attract the attention of the marketing practitioners towards the distribution of marketing resources. When higher financial performance is targeted to be obtained, the allocation of the resources need to be made carefully (Clark and Ambler, 2001) with the detailed examination of the potential returns.

Measuring marketing productivity is not always very easy. There are three difficulties which might come up when measuring the marketing productivity (Rust et al., 2004a). The first difficulty comes up when the long-term examination is needed. Here, the complexity results from the difficulty to link the marketing efforts to long-term effects (Dekimpe and Hanssens, 1995). The second difficulty is splitting the marketing efforts from the other activities (Bonoma and Clark, 1988). When this separation is not correctly executed, the evaluation gives wrong conclusions. Therefore, the tools which are able to accurately make the split should be used. The third difficulty is that the financial measures are not enough to properly make the reasoning for the marketing investments, so non-financial metrics are required (Clark, 1999). Based on all difficulties and the needs, a new era has started for marketing performance assessment through employing non-financial metrics.

2.7.2 Measuring output by non-financial metrics

From late 1970s-1980s onwards, a shift started towards the usage of non-financial metrics (Clark and Ambler, 2001). From these non-financial metrics, market share became very popular in this period as a measure. Market share is a metric which enables a firm to see itself within the whole market and therefore compare itself with its competitors. Another metric which attracted big attention in this period is the adaptability or innovativeness of the organization's marketing. This measure emphasizes that the organizations which are able to adjust themselves according to the dynamic environmental conditions will be successful. The other metric which become attractive is customer satisfaction. Customer satisfaction is a crucial metric in terms of the business performance. In this relation, the customer satisfaction is assumed to be effective on business performance through customer loyalty (Reichheld and Teal, 1996) as a result of frequency and higher volumes of purchases (Dick and Basu, 1994). Therefore, increasing customer satisfaction and holding it at a proper level is very important to have a high level of business performance. In addition, the measure of customer retention attracted heavy attention (Clark and Ambler, 2001) with the impact of customer satisfaction metric. Being able to measure the customer retention provides the firms to evaluate themselves from the customer point of view. In case of decreasing trends in customer retention, firms can take preventive actions.

2.7.3 Measuring market orientation

Market orientation means that the organization continuously collects, interprets, distributes, and utilizes the market information (Clark and Ambler, 2001). As market orientation is based on the market information usage, it definitely is positively effective on business performance. But, the empirical evidence shows that the link between market orientation and business performance is complicated. This complication is caused due to the different moderating and mediating elements (Matsuno and Mentzer, 2000). Therefore, all these affecting factors need to be examined for clarification of the relationship between market orientation and business performance.

2.7.4 Measuring market-based assets

The final stage in marketing evolution research is the measurement of market-based assets (Srivastava et al., 1998). These measures are customer-based metrics. Therefore, these assets have an important impact on the value of the firms by taking customer as the focal point (Rust et al., 2004a). According to the brand value chain, before creating a financial result, the marketing efforts of the firms influence the customer minds in the first place. From this perspective, market-based assets are the tools which enable to evaluate the financial effect of marketing (Rust et al., 2004a) in advance that the financial result becomes evident. Hence, brand equity and customer equity are two main market-based assets providing the firm's early insights.

A firm cannot create brand equity immediately, but it needs time and marketing efforts to be developed (Keller, 1998). However, once it is generated, it provides significant advantages in turn (Clark and Ambler, 2001) by enhancing business performance. Hence, measuring brand equity and knowing the status of the brand equity is important. For this, brand equity measurement can be approached from behavioral and financial perspective (Clark and Ambler, 2001). The behavioral approach is based on the measurement of the customer feedback to the marketing efforts of the brand (Keller, 1993). The metrics for this measurement might cover sales, customer acquisition, retention, and loyalty. From the financial approach point of view, the aim is to identify the financial value of the brand (Clark and Ambler, 2001). Simon and Sullivan (1993) defined brand equity from this perspective. They define brand equity as the additional

cash flow gained from the branded products compared to the unbranded ones. Hence, both techniques will help to define the brand equity of a firm.

The other important market-based asset is customer equity (Rust et al., 2000b). Customer equity can be defined as the total of the lifetime values of the current and potential customers (Rust et al., 2004a). This asset takes customer's perspective into consideration (Rust et al., 2004a). The shift from transaction oriented to relationship marketing and the resulting improvement of the service sector increased the importance of the customer lifetime value (Hogan et al., 2002b) and therefore customer equity.

2.8 Critics and Limitations in Marketing Performance Assessment

Especially after 2000s, the marketing literature attracts attention towards the decreasing impact of marketing department within the organization (e.g. Verhoef and Leeflang, 2009). This is a result of the perception of low accountability of marketing and causes a depreciation of marketing's credibility and marketing's stature in the organization (Rust et al., 2004a; Lehmann, 2004). Even, the debates started to question why marketing is not involved when the strategy of the organization is created (Day, 1992) since marketing department is expected to be involved in such a crucial decision for the organization. From this perspective, the outlook for marketing is that it lacks in explaining the outcomes of the marketing efforts and the utilized sources (Petersen et al., 2009). The studies showing the relationship between marketing and organizational goals are not also enough for further explanation (Ambler et al., 2004). In addition, limited performance measurement ability is another reason carrying marketing to this end (Srivastava et al., 1998). It's clear that the impact of marketing improves when marketing performance is effectively measured by right metrics (Lehmann, 2004). Hence, due to the lack of the studies in marketing performance topic, the calls for marketing to become more accountable have started. Even the calls are not new (Sevin, 1965), but these calls have increased since 2000s (Sheth and Sisodia, 2002; Rust et al., 2004a; Srivastava and Reibstein, 2005; Stewart, 2008).

Other than accountability discussions, marketing performance literature has been criticized in terms of (Ambler et al., 2004) a) low indicative capability (Day and Wensley, 1988), b) its short-term approach (Dekimpe and Hanssens, 1995; 1999), c) containing too many noncomparable metrics (Clark, 1999), d) the stickiness of the

perceived performance result to the metrics used (Murphy et al., 1996), e) missing focus given to increase the shareholder value (Doyle, 2000), and f) lack of the appropriate metrics (Ambler and Kokkinaki, 1997). Especially, the lack of the appropriate metrics is a major problem in marketing performance literature. It is a result of the complication of time-lagged effects (Dekimpe and Hanssens, 1995), complicated measurement of brand equity, and the priority given to financial metrics (Kokkinaki and Ambler, 1999). In addition to these difficulties, another obstacle is that the underlying reasons for choosing the marketing metrics have not been well understood (Gao and Liang, 2016). Hence, as a result of the lack of the right metric choice, the assessments remain limited. Another point of criticism is that the applicability of the marketing metrics highly depends on the organizational and environmental aspects, therefore there is not a common effective marketing measurement approach (Frösen et al., 2013). The factors such as the existence of chief marketing officer (CMO) (Mintz and Currim, 2013), marketing dashboard usage (O'Sullivan and Abela, 2007), complicated structure of marketing (Homburg et al., 2012), market turbulence (Mintz and Currim, 2013), technological turbulence (Jaworski and Kohli, 1993), and the intense competitive environment (Bennett, 2007) might be the factors which have impact on the different marketing performance assessment methods.

There are also some limitations in this field. The limitations of marketing performance assessment are mostly result of the complicated nature of marketing relationships which slows down the development of marketing performance assessment (Kotler, 1971). Emphasizing that marketing performance assessment is not an easy job, Clark et al. (2006) cite the following reasons. The assessment of time lagged effects is always difficult, as the results of the taken actions do not appear at the same time, rather the result arise later. As marketing performance assessment encompasses time lagged effects of the marketing actions, the assessment of these actions requires a special task. In addition, marketing comprises several interconnected roles. As these roles create a complicated structure affecting one another, the assessment process needs to be designed carefully. Moreover, marketing is in contact with several players such as consumers, competitors. As a consequence of various actors in the assessment process, the assessment needs to broaden the view including all of the effective players. Hence,

all of these features make the measurement of marketing efforts difficult and complicated (Clark et al., 2006).

All these points put marketing practitioners and researchers under a stress to demonstrate the added value of marketing on shareholder value (Doyle, 2000). Hence, improved accountability has emerged as a need for marketing understanding (Morgan et al., 2002). As a result of the debates, new studies have emerged in the literature with the belief that the business performance is enhanced by the improved marketing accountability which improves marketing credibility at the same time (Morgan et al., 2002). Day and Fahey (1988) emphasize the significance of the new metrics when defining business performance. Rust et al., (2004a) highlight that introducing new techniques and processes evaluating marketing productivity enhance marketing's stature in the organization. Several different studies have been raised by the researchers, as a reaction to the calls for more marketing performance assessment research (e.g. Rust et al. 2004a; Ambler et al., 2004; Clark et al., 2006). In addition to the researchers, also marketing practitioners have been regularly called to clearly show the marketing impact on business performance (Ambler, 2003). Hence, marketing performance assessment topic becomes an interesting area for both researchers and practitioners.

As discussed, an effective marketing performance assessment is very important from several aspects. At this point, appropriate metric selection becomes one of the crucial factors when assessing marketing performance. Therefore, the following chapter will discuss the major marketing metrics and their characteristics in detail.

3. MARKETING PERFORMANCE METRICS

3.1 Definition of Marketing Metrics

Ambler (2000) defines a metric as a measure which is used for performance assessment. He claims that the term “metric” can get mixed with the term “measure”, but it is not exactly the synonym of measure. Even a metric can always be defined as a measure, a measure cannot be expressed as a metric in all conditions. According to Ambler (2000), in order to be defined a metric, a measure should be essential, accurate, rational, and inclusive. Hence, a metric holds several attributes. A marketing metric, on the other hand, is defined as “a necessary, accurate, consistent, and sufficient financial or nonfinancial measure for senior management to evaluate marketing performance regularly” (Ambler, 2000, p.5). Kotler et al. (2009) describe marketing metrics as a group of performance measures which are used by the organizations to compute, contrast and interpret the marketing performance. The authors claim that to be a superior marketing metric, the metrics shall possess some characteristics. One of these requirements is that such a metric needs to be measurable so that they enable to communicate with the other divisions in the organization. This approach provides a common language within the divisions. Otherwise, it would be difficult to discuss on something which cannot be quantified. Another requirement is that a favorable marketing metric is better looking forward, rather than looking backward. Thus, the metric will have a leading effect for the future. In addition, to be a valuable marketing metric, a metric should enable a detailed examination of marketing performance. This capability facilitates to make in depth analysis in a requested breakdown. Finally, a good marketing metric is required to provide unbiased information which can be quantified and enable the essential comparisons. Hence, a marketing metric holding these properties can be a valuable tool to monitor the marketing performance.

The identification of the metrics constitutes an important place in marketing performance literature (Ambler et al., 2004; Barwise and Farley, 2004). Studies claim that different types of metrics should be used by the firms such as financial metrics, non-financial metrics (Clark 1999; Rust et al. 2004a), and benchmark metrics which

enable the firms to compare themselves with their competitors and with their targets (Ambler, 2003). The organizations using a broad variety of metrics will handle marketing performance measurement in a superior manner (O'Sullivan and Abela, 2007). In these terms, marketing metrics become a priority with enhanced interest of measuring marketing productivity from several perspectives.

There are various types of marketing metrics enabling marketers to use the related metric from a wide range of alternatives. Therefore, any marketing assessment first needs to be initiated with deciding on what to measure (Clark, 2000a). Hence, the most appropriate metrics can be selected with a clear identification of the measurement entity. In addition, the characteristics of marketing metrics used by the organizations for their marketing performance assessment practices depend on the resources and capabilities of the firms (Shaw and White, 1999). Hence, the firms determine the metrics which are matching with their resources and which can be used in accordance with their capabilities. In addition, the marketing strategy, market intelligence, and environmental factors are also useful when deciding the suitable metrics (Mintz and Currim, 2013). All these criteria of the metric selection reflect the contextual structure of the marketing metrics (Gao and Liang, 2016) and how miscellaneous factors are effective on the metric decision.

The importance of marketing metrics has increased in time. Accountability need is one of the reasons why metrics gain importance. As Seggie et al. (2007) state, for the organizations aiming to be accountable, measurement become one of the key essentials. From this perspective, marketing expenses are considered as investments where the return on marketing investment is gained value as a measure shaping the organizational strategy (Schultz and Gronstedt, 1997). According to the returns of the marketing investments, the firms can examine which marketing efforts have paid off when compared with the expense of these efforts. This type of an analysis can display the distinction between profitable and non-profitable marketing activities for the firm. Hence, the marketing strategy will be then established based on the insights gained from this examination. Additionally, this type of an analysis corresponds to the financial accountability (Moorman and Rust, 1999). It enables the marketing professionals to justify the budgets which they have allocated for diverse marketing activities. The crucial role of the marketing metrics in this context is that they explain the causal links between marketing efforts and business performance (Seggie et al.,

2007). With this kind of detailed analyses, the marketing professionals can investigate the consumer behavior which enables them to use superior approaches with improved metrics (Rust et al., 2004c). In addition, information technology (IT) developments create significant impact in metrics usage. The availability of technological facilities enables various metrics to be used for performance assessment (Seggie et al., 2007). These metrics and new approaches enable the assessment techniques become more sophisticated with the empowerment of the results of the evaluations.

3.2 Evolution of Marketing Metrics

Gaining more importance in time, marketing performance metrics evolved according to the changing needs. Clark (1999) identified the evolution of the marketing performance measures in three directions. The first direction of movement is that the metrics evolved from financial to non-financial output measures. In initial stages, the theoretical studies, as well as empirical studies, focus on financial measures. The reason behind the tendency to use financial metrics is based on the definition of marketing at that time. At first, the marketing domain is established on the distribution and exchange of goods. But, after service marketing and therefore relationship marketing attracted attention in marketing domain, there occurred a shift from exchange of tangibles towards exchange of intangibles. With this movement, the measurement of non-financial measures gained importance to be able to explain the relationships in the marketing domain. The second direction of the movement happened from output measures to input measures. In the initial stages of marketing performance assessment, the studies focus more on the outputs with the lack of detailed examination of the input measures. The absence of a clear examination of the input-output relation decreases the value of the interpretation of the output. Hence, focusing on the input measures, rather than focusing only on the output measures, will define the relationship between input and output. This enables the firms to adapt their inputs according to the desired output. The third direction of the evolution is the shift from one-dimensional to multi-dimensional measures. This movement obviously stemmed from the need to monitor more than one performance measure. As the marketing performance is affected by several factors, the multi-dimensional approach provides versatile control on diverse measures.

3.2.1 From financial to non-financial measures

The first studies of marketing performance measurement focus on the productivity and profitability of marketing activities directing the marketing practitioners how to use their resources in the best way (Clark, 1999). The studies in this field originated from the works of Sevin (1965) and Goodman (1970, 1972) which clearly present how to link financial outputs to marketing inputs. The other contribution in this field came from Feder (1965) examining the most profitable way to allocate the marketing resources. The following studies started using more advanced metrics than profitability such as cash flows and net present value of marketing efforts (Day and Fahey, 1988). Bonoma and Clark (1988) conclude that the most common metrics used in this period were profit, sales unit, sales value, market share, and cash flow.

From 1980s onwards, the output metrics are started to become non-financial measures which aim to discover the mediating parameters between marketing efforts and financial outputs (Clark, 1999). Indeed, studies show that there are several mediating parameters between marketing efforts and outputs (Bonoma and Clark, 1988). The reason behind the shift from financial to non-financial measures is obviously the emergence of the new approaches such as service marketing, relationship marketing, and service quality in the 1980s. These approaches focus on the exchange of intangibles, rather than tangibles. As mediating factors occur between marketing activities and the financial outcomes, these intangible mediating factors can be measured by non-financial metrics. Therefore, this shift is needed in marketing performance assessment literature.

In addition, there is evidence in the literature that the traditional metrics are not satisfying due to the lack of long-term prediction capability (Ittner and Larcker, 1998; Kaplan and Norton, 1992). Starting to take marketing as an investment, the long-term approach becomes important which requires forward-looking, long-term metrics (Laverty, 1996). Additionally, accounting measures become incompetent when assessing intangible assets (Bayon et al., 2002). With the assumption of marketing as an investment, the outputs of this investment are treated as an asset and need to be measured by the metrics in use (Seggie et al., 2007). Additionally, subjective measures used for performance assessment cause biased results (McMullan et al., 2001; Moers, 2005). Therefore, it is not possible to link the subjective measures and financial performance (Hogan et al., 2002a). Finally, there is a need for measures which can

provide the organizations to compare themselves with their competitors supported by the theory that the competitive superiority is a result beating the competitors (Srivastava et al., 2001). With such benchmark metrics, the firms can see their position within the market and relative to their rivals.

With the recognition of the importance of marketing metrics, some metrics gain more importance in this period. For example, market share stands out in this period as an output metric supported by Boston Consulting Group (Henderson, 1973) and by the studies on the Profit Impact of Market Strategies (PIMS) project (Buzzel and Gale, 1987) claiming that market share is a powerful forecaster of cash flow and profitability. In addition, the development of service marketing combined with the discussions about the importance of this concept for the company value, leads to the utilization of the metric of service quality (e.g. Bucklin, 1978; Parasuraman et al., 1988, Cronin and Taylor, 1992). In addition, adaptability is defined as a dimension of marketing performance (e.g. Walker and Rukert, 1987). Hence, this metric becomes one of the significant indicators and is used with innovativeness interchangeably. Additionally, the importance of the customer, and therefore customer satisfaction (Anderson and Sullivan, 1993) and customer loyalty (e.g. Dick and Basu, 1994) as a mediating factor between marketing actions and financial outcomes directed researchers to focus on these metrics. Brand equity (e.g. Keller, 1993; Aaker, 1996a), on the other hand, generates major discussions in marketing literature and creates big impact. This metric becomes one of the significant measures in this period. Hence, with the investigation of the mediating effects between marketing activities and financial outcomes, the importance of these non-financial metrics is well accepted by the marketing community.

3.2.2 From output to input measures

There are different concepts which are dealing with inputs. Marketing audit concept is an early attempt of these concepts. The aim of a marketing audit is to assess the marketing efforts which constitute the inputs. This evaluation of the marketing inputs is quite significant, since these inputs have direct impact on the final performance (e.g. Rothe et al., 1997). The marketing audit concept emerged in 1950s, but it becomes popular with Kotler (Kotler et al., 1977). It consists of several stages. In the initial stage, the authors suggested the examination of the environment. This examination will be then followed with the analysis of the organizational strategy, with the systems,

and with the marketing productivity in the second stage. After all these stages, the individual marketing functions are suggested to be analyzed. Another concept which is related to the marketing inputs is market orientation. It deals with the marketing input characteristics (Clark, 1999). This concept is associated with gathering, analyzing, disseminating, and utilizing the market information (Kohli and Jaworski, 1990; Narver and Slater, 1990). The extent how much a firm adopts a market orientation approach can be detected by the marketing metrics they employ in marketing performance assessments.

As a result of the shift from output measures to input measures, the popularity of some mediating measures has increased. Hence, the enhanced interest for the measures like customer satisfaction, customer loyalty, and brand equity is as a consequence of this movement from financial output towards input measures which occur in earlier stages in the input-output chain (Clark, 1999). These kinds of intermediate outcomes can be regarded as marketing assets (Srivastava et al., 1998) which have impact on the maximization of financial performance. In general, marketing efforts have impact on the intermediate outcomes which in turn influence the ultimate financial performance (Clark, 1999). Therefore, investigating the measures which appear in initial stages enables the marketers to control and affect the ultimate financial outcome in advance.

3.2.3 From one-dimensional to multidimensional measures

The initial studies in marketing performance advocate one or a few number of financial measures to assess the outcome of the marketing efforts (Clark, 1999). However, with the initialization of multidimensional marketing audit concept (Kotler et al., 1977) in 1970s, a transformation has occurred. Coming to 1980s, the concepts of marketing efficiency and effectiveness approaches are proposed by Bonoma and Clark (1988) and Walker and Ruekert (1987). In addition, Walker and Ruekert (1987) included adaptability measure as the organizational ability to respond to the dynamics of the environments. In addition, the paradigm from management literature has also influenced the shift to multidimensional measures (Clark, 1999). Hence, all these concepts display that multidimensional measures provide different and miscellaneous perspectives for examination. This approach of the analysis examines the output data from different points of views so that the insights and interpretations gathered from the outcome are enriched accordingly.

3.3 Theoretical Approaches for Metric Selection

There are various metrics serving different types of needs. These metrics are selected based on different approaches and theories. Ambler et al. (2004) state that metric selection is affected by control, orientation, institutional, and agency theories. Control theory states that management of an organization has a defined strategy and determined stages. According to this theory, actual performance is benchmarked with the pre-defined stages which are designed for the application of the strategy. Hence, the metrics are selected according to these stages. Institutional theory posits that the metrics are selected based on the cultural norms and the sectors of the firms where they run their business. Orientation theory claims that the selection of the metrics is made according to the way how the top management of the firm perceives the business. As the level of the market-oriented approach increases, then more market metrics will be requested. Finally, according to the agency theory, the metric selection depends on the interaction between two levels of management (Ambler et al., 2004). The details of these approaches of metric selection are discussed below.

3.3.1 Control theory

Jaworski (1988) states that “planned marketing activities produce desired results” (p. 24) when he defines marketing control. The coverage of control theory is based on a defined strategy consisting of different steps (Ambler et al., 2004). After execution of the pre-defined stages, the actual performance outcome is then benchmarked with the expected and planned results of this strategy. Hence, the metric selection is executed to fulfill the need of right comparison of the actual performance and the expected objectives. In this context, Fraser and Hite (1988) suggest that metric selection is a significant step. In this step, the marketing professionals increase their knowledge about enhancing the performance by changing their benefit levels which are linked with marketing control variables.

Merchant (1998) claims that control is both reactive and proactive. It enables to foresee problems before they negatively affect the performance. He states that controls contain the tools with which the managers make sure that the people in the organization are in line with the organizational goals and strategies in terms of their actions and decisions (Merchant, 1998). Certainly, the control processes need a budget to be allocated for this action. From this perspective, the costs of the control process should be checked

versus the benefits gathered from them (Ambler et al., 2004). In order the control processes to be profitable, the allocated budget shall be lower than the gained benefits. There can be different types of control mechanisms. Kotler (2003b) identifies four types of marketing controls: annual plan, profitability, efficiency, and strategic control. Every type of control approach focuses on different aspects of the organizational performance. The strategic control checks whether the organization defines the right objectives. The strategic control ensures that the correct organizational goals, which are in line with the long-term firm strategy, are set and applied. In addition, effectiveness control and annual plan control both examine whether the defined objectives are realized. They compare the results versus the targets which are set for the firm. Profitability control, on the other hand, shows whether the company is successful in terms of producing money. As the main objective of a company is to be profitable, this control process provides an important insight regarding the financial performance. The efficiency control identifies the return on the marketing costs. The expected outlook for a profitable relation is that the return of marketing activities is higher than the marketing expenses. Thus, according to the control theory, the management of the organization sets the objectives and the metrics are used to compare the actual results with the objectives identified before (Ambler et al., 2004).

3.3.2 Agency theory

The focal point in agency theory is the contractual relationship between the principal and the agent. According to this theory, the delegation of the job is made to the agent by the principal (Ambler et al., 2004). Agency theory refers to an economic view which investigates how the information is carried in a vertical direction within the organization. Based on this theory, the positive information for the agent is transmitted to the principal to the extent that the gain of sharing the information is lower than the cost of gathering and communicating the information (Ambler et al., 2004).

This approach is associated with the control theory in terms of that agency theory evaluates the relative gains of behavior-based contracts versus outcome-based contracts in order to make sure the loyalty of the agents (Nilakant and Rao, 1994). The efficiency of behavior-based controls versus outcome-based controls is higher where the difficulty of effectively assessing marketing performance increases (Eisenhardt, 1985). This means that checking marketing costs is more reliable where assessing the

marketing outputs is more complicated. In this context, metrics are preferred which are defending the planned marketing budget by creating a relation with the previous marketing activities and examination of their outcomes (Ambler et al., 2004).

3.3.3 Institutional theory

According to the institutional theory (Meyer and Rowan, 1977), the organizational activities are mainly influenced by the cultural values, the history, and the sector of the organization. Hence, the marketing information transmitted to the top management can be gathered from “perceptions of legitimate behavior derived from cultural values, industry tradition, firm history, popular management folklore, and the like” (Eisenhardt, 1988, p. 492). In the organizations where this approach is adopted, the organizational activities depend on the traditional bases even big changes occur in the technology or job description (Eisenhardt, 1988; Zucker, 1987). According to the institutional theory, organizational actions are legitimated by the environment (Tolbert and Zucker, 1983). Therefore, the marketing metrics which are picked are the ones which are familiar to the top management rather than even more suitable ones (Ambler et al., 2004).

3.3.4 Orientation theory

Market orientation literature claims that the type of the marketing concept applied in an organization determines the performance assessment system (Moorman, 1995). The level of an organization being market-oriented affects the level of the top management puts importance for marketing assessment (Kohli and Jaworski, 1990; Narver and Slater, 1990). This is expected because being market-oriented requires gathering and dissemination of the market information within the organization (Kohli and Jaworski, 1990; Slater and Narver, 1995). This can be managed with the selection of the appropriate metrics which provide correct communication. Hence, there are organizational rules for market orientation in the market-oriented organizations (Homburg and Pflesser, 2000) which define the coverage of the information that will be shared with top management (Ambler et al., 2004). Thus, the metric selection is influenced by the content of this information.

3.4 Types of Marketing Metrics

3.4.1 No “silver metric”

When the performance outcome is represented in a single number, this single number is called “silver metric” (Ambler and Roberts, 2008). Given that different metrics have different strengths and weaknesses, it can be claimed that there are no silver metrics for marketing (Ambler and Roberts, 2008). Hence, rather than focusing on a single metric of marketing performance (Walker and Ruekert, 1987), marketing assessment systems need to include a set of different metrics (Rust et al., 2004a; Morgan et al., 2002, Katsikeas et al., 2016) in order to highlight all the impacts from the customer to the financial outcomes. But, these metrics need to constitute an aggregated system not to make the evaluations more complex (Ambler et al., 2004). In addition, marketing assessment systems are recommended to be kept uncomplicated also due to budget concerns as the cost of a big metrics’ data set can be expensive (Kaplan and Norton, 1992). Hence, the marketing metric portfolio should be at an optimum level, so that it fulfills all the requested output of the analyses with consideration of budget concerns.

Supporting the debates in the literature, Clark and Ambler (2011) also highlight that single silver metric is not capable to show the whole image for management. In addition, the authors add that many metrics concentrating in a limited field are also not useful for a broad investigation. Therefore, the management needs a workable portfolio of metrics to monitor the organizational performance. Even there are lots of marketing metrics defined and suggested by the researchers, marketing managers face complexities in constituting the perfect portfolio (Ambler and Xiucun, 2003) which can be defined as marketing dashboard. A marketing dashboard is the set of the proper data (Pauwel et al., 2009). There are two main elements of this tool: data mining and analyzing processes (Rasmussen et al., 2009). In data mining process the data is stored in a regular base. This process is then followed by analyzing process with the usage of the stored data. Hence, in order to establish a proper marketing dashboard, data mining is a crucial initial stage, as the added value of the analyses highly depends on the quality of the data on hand.

3.4.2 Taxonomies of marketing metrics

There are several taxonomies for marketing metrics which are proposed by different researchers. These classifications differ from each other in terms of the criteria which

they consider when grouping the metrics. There are mainly four groups of researchers whose taxonomies are broadly acknowledged in the marketing literature.

Clark (1999) is one of the authors whose classification of marketing metrics retrieved wide acceptance in marketing literature. The author summarizes marketing metrics in four categories: single financial output measures, non-financial measures, input measures, and multiple measures. Single financial output measures include metrics such as profit (e.g. Sevin, 1965), sales revenue (e.g. Feder, 1965), and cash flow (e.g. Day and Fahey, 1988). These metrics are the ones which were very popular in the early stages of marketing performance studies. However, coming to 1980s, the use of non-financial measures increased in the studies due to the impact of the developments in service marketing. Non-financial measures are constituted from metrics such as market share (e.g. Szymanski et al., 1993), quality of services (e.g. Bucklin, 1978), adaptability (e.g. Walker and Ruekert, 1987), customer satisfaction (e.g. Anderson and Sullivan, 1993), customer loyalty (e.g. Selnes, 1993), and brand equity (e.g. Aaker and Jacobson, 1994; Keller, 1993, 1998). Input measures, on the other hand, cover metrics such as marketing assets (e.g. Srivastava et al., 1998), marketing audit (e.g. Brownlie, 1993, 1996), marketing implementation (e.g. Bonoma and Crittenden, 1988b), market orientation (e.g. Kohli and Jaworski, 1990; Narver and Slater, 1990). This type of measures focuses on the measures occurring in earlier stages of marketing productivity chain. Multiple measures refer to the metrics such as efficiency (Bonoma and Clark, 1988), effectiveness (Walker and Ruekert, 1987), and multivariate analysis (Bhargava et al., 1994). These measures cover more than one parameter for examination. As sticking to one metric will not be enough to cover all the aspects of the performance outcomes, multi-dimensional view provides a broader perspective.

Different than Clark's approach, Kokkinaki and Ambler (1999) claimed that marketing metrics can be classified under six categories: financial, competitive market, consumer behavior, consumer intermediate, direct customer, and innovativeness. Same as in Clark's approach, financial metrics include the indicators such as turnover, contribution margin, and profits. The metrics which are called competitive market metrics are the ones such as market share, advertising share, and promotional share. These metrics provide a benchmark for the firm versus its rivals. Consumer behavior metrics, on the other hand, cover the indicators such as customer penetration, customer loyalty, and new customers gained. The behavior of the consumer can be tracked by

these metrics. Consumer intermediate metrics are the mediating metrics which stand between marketing efforts and the business performance. From this perspective, they provide early signals for the ultimate performance outcome. These metrics contain the ones such as brand recognition, satisfaction, and purchase intention. Another metric category is direct customer metrics which refer to the indicators such as distribution level, the profitability of intermediaries, and quality of service. These metrics focus on the indicators where the company has a direct contact with the customer. Finally, innovativeness metrics include metrics such as the number of new products launched and their revenue as a percentage of the total turnover. These metrics can be regarded also as a measure of innovativeness capability of the firm.

Another approach to the classification of marketing metrics is made by Gupta and Zeithaml (2006). The authors classify the customer metrics as observed/behavioral and unobserved/perceptual metrics. Observed metrics include customer behaviors such as customer acquisition, customer retention, cross selling, customer lifetime value, and customer equity. From customer point of view, these are related to the choices made during the buying period. Unobserved metrics, on the other hand, cover the customer perceptions, attitudes, and intentions such as customer satisfaction, service quality, loyalty, and intentions to purchase. Hence, according to this approach, unobserved metrics arise earlier than the observed metrics. At this point, the unobserved metrics can be regarded as the pioneers of the observed metrics. With this feature, unobserved metrics hold significant importance being the early warning when there is something wrong from the customer point of view. Monitoring the unobserved metrics, therefore, enables the firms to take contingency actions before customer thoughts turn into customer behaviors.

The last categorization of metrics belongs to Best (2014). The author proposes four groups of metrics identifying the performance. According to his classification, metrics are identified as internal – external metrics or forward looking – backward looking metrics. The metrics assessing the measures such as sales revenue, financial profitability, employee and capital productivity, expenses and asset utilization are grouped under internal metrics. Besides, external metrics are the measures presenting a market-based perspective. These metrics focus on measures from customer point of view such as customer awareness, customer satisfaction, perceived performance, intention to repurchase as well as market performance point of view with the metrics

such as market share, customer retention, and revenue per customer. The forward-looking metrics express future performance, and they are used regularly during the operating periods. From this perspective, they are more crucial in terms of their ability to indicate future financial performance (O'Sullivan and Abela, 2007). These metrics include measures such as product awareness, intention to repurchase, customer satisfaction, customer perceptions regarding product, and service quality. Any changes in these metrics result in deviations in customer purchasing behavior. Therefore, these metrics provide clues regarding future purchase behavior and ultimately future revenue and profits. Backward looking metrics, on the other hand, assess past performance and they are measured at the end of the operating period (Cressman, 1994). These metrics provide an outlook of the firm with its actual performance but do not make a future prediction (Meyer, 1994). Some of these backward-looking measures are market share, customer retention, and revenue per customer.

The above mentioned four taxonomies review the metrics from different perspectives and create different categories which are based on different theories of metric selection. The fact is that the content of the categories mainly covers the same bulk of metrics, but putting them under different name of groups. However, examining the marketing literature, it can be concluded that Clark's taxonomy is the one from these classifications which is broadly acknowledged for the empirical studies in the marketing literature (e.g. O'Sullivan and Abela, 2007; Barwise and Farley, 2004). This stems from the broad perspective this taxonomy provides for the marketing performance assessment.

Marketing metrics are not the only dimension influencing the effectiveness of the marketing performance assessment. At this point, reviewing the potential marketing related factors with the measurement approaches in empirical studies becomes important. Marketing related resources and capabilities are one of the effective factors on the performance. Hence, the following chapter will discuss the role of the marketing related resources and capabilities on the performance.



4. THE ROLE OF RESOURCES AND CAPABILITIES IN PERFORMANCE

4.1 The Concept and Impact of Resource-Based View

Resource-based view (RBV) is widely discussed in the strategy literature (e.g. Grant, 1995; Wernerfelt, 1995) which is one of the dominating topics in 1990s (e.g. Barney, 1991; Peteraf, 1993). Supported by the strategic management literature, the resource-based view and the resource-based theory (RBT) which is an outcome of this view constitute a broad framework for competitive advantage and performance of the companies (Barney et al., 2011; Vorhies and Morgan, 2005).

The RBV underlines the significance of key resources to generate the competitive advantage and highlights the importance of establishing a competitive position (Hooley et al., 2001). Although the initial works regarding the significance of the resources on the firm's performance are mentioned by Penrose (1959), resource-based view was only developed in 1980s. At that point, first, the industry-based parameters are identified determining a firm's profitability (Porter, 1979). Later, researchers started to claim that resources and capabilities of a firm define its profits (Wernerfelt, 1984). In this vein, the seminal work of Wernerfelt (1984) is treated as the first main study for the RBV in strategic management literature. In his conceptual study, Wernerfelt (1984) claimed that each company can be defined as a set of tangible and intangible resources. This study highlights the benefits of examining the companies from the resource perspective, rather than product perspective. According to this approach, the resource perspective is more beneficial for the goodwill of the company in terms of providing insight on the strategic options (Wernerfelt, 1984).

After Wernerfelt (1984) proposed resource-based view, there occurred many discussions in the literature about resources and their contributions to gain sustained competitive advantage. The RBV appeared representing a different perspective from the Porterian view of competition (Porter, 1980) which emphasizes the crucial role of organizational parameters (Hansen and Wernerfelt, 1989). Many studies are produced regarding to this topic to examine the features and the types of resources. These

resources are the ones which provide value for the customers (Barney, 1991), and staying against any imitations by the competitors (Dierickx and Cool, 1989; Reed and DeFilippi, 1990).

Another study which constitutes a milestone regarding the resources and the related consequences is the work of Barney (1991) in the strategic management literature. In his study, Barney (1991) examined the relationship between the company resources and sustained competitive advantage. The author defined required attributes that are necessary so that the resources can generate sustained competitive advantage; namely, value, rareness, inimitability, and non-substitutability (Barney, 1991).

After all the studies, there is a bit of an uncertainty regarding the usage of the terms resource-based view and resource-based theory (Kozlenkova et al., 2014). Even though some researchers still use resource-based view, this view has been already advanced into a theory in recent years (Barney et al., 2011). This is also supported by the increased number of the papers referring to resource-based theory (Armstrong and Shimizu, 2007; Crook et al., 2008). Hence, even the resource-based view is evolved into a theory; namely, resource-based theory, the notion of the resource-based view will be used in this study.

The resource-based view provides significant insights regarding the competitive advantage and competitive positioning. As the markets become more intense in terms of the number of players and different type of customers, competitive positioning decisions become more important which include determination of the target markets and the subsequent steps to obtain competitive gain (Hooley and Saunders, 1993). This competitive gain needs to be established based on the distinguishing resources and capabilities (Hamel and Prahalad, 1994; Webster, 1994). According to RBV, the strategy is developed based on the resources of the company. Undoubtedly, sustainable strategy should be set by matching the strategy with the resources and capabilities of the company (Hooley et al., 1998). Hence, resource-based view considers firm-specific resources as the center of competitive advantage and firm performance (e.g. Conner, 1991; Peteraf, 1993; Wernerfelt, 1984). According to this approach, different company resources result in different strategies which lead to different performance outcomes (e.g. Amit and Shoemaker, 1993).

As mentioned above, resource-based view and resource-based theory depends on the strategic management literature. However, the resource-based theory finds a broad

area of application in marketing literature as well. These areas can be summarized in three main domains; such as marketing strategy (Fang et al., 2011;), international marketing (Ruiz-Ortega and Garcia-Villaverde, 2008), and marketing innovation (Srinivasan et al., 2002). The reason that the marketing scholars are using RBV is to establish a framework explaining the relationship between the marketing activities and the resources (Kozlenkova et al., 2014). Hence; based on the RBV, marketing researchers are able to explain long term impacts of marketing investments leading to the improvement of resources and capabilities (Hult and Ketchen, 2001). Consequently, the improved resources and capabilities lead to long-term performance of the company (Kozlenkova et al., 2014).

The resources and capabilities and the resulting competitive advantage are the main topics which are discussed in the resource-based view literature. Hence, the sections below are devoted to the different types of resources and capabilities and the competitive advantage which appears as the outcome of the effective usage of them.

4.2 Sustained Competitive Advantage

A competitive advantage of a company is realized when it produces “more economic value than the marginal (breakeven) competitor in its product market” (Peteraf and Barney, 2003, p. 314). Further, a sustained competitive advantage of a company is achieved “when it is creating more economic value than the marginal firm in its industry and when other firms are unable to duplicate the benefits of this strategy” (Barney and Clark 2007, p. 52). Aaker (1992) stated that the sustained competitive advantage is a strategy which is appreciated by the market, maintained by the capabilities and resources and cannot be copied by the other competitors in the same market. That means when a company uses its resources in an effective way and it is not imitated by any of its competitors in terms of its resources, the company can gain sustained competitive advantage (Mahoney and Pandian, 1992). Therefore, RBV focuses on the determination of the firm specific key resources and utilizing them in a most effective way (Grant, 1991).

There are two main opinions regarding the sustained competitive advantage and why some companies are better in gaining sustained competitive advantage (Kozlenkova et al., 2014). The first one is the difference in the resource portfolios of the companies despite being the player of the same industry (Peteraf and Barney, 2003). The variety

of the resources that some firms acquired is more effective because of their exclusiveness (Peteraf and Barney, 2003). The second one is that these resources are hard to exchange due to resource immobility assumption and therefore their advantages continue over time (Barney and Hesterly, 2012). Thus, in case a company owns individual resources which are rarely found in other companies and thus, hard to be copied by them, then this company can likely obtain sustained competitive advantage (Barney and Hesterly, 2012).

The previous versions of RBV define the resources, which are able to generate sustained competitive advantage, with four attributes such as being valuable, rare, inimitable, and non-substitutable (Kozlenkova et al., 2014). However, the contemporary version of RBV claims that the non-substitutability condition can be considered under the imperfectly imitable attribute (Barney and Clark, 2007; Barney and Hesterly, 2012) which means that there should not be any resources which are as valuable as the other resources generating competitive advantage (Barney, 1991). If there are any alternative resources by which the competitors generate same strategies but with usage of different resources, then it means that the resources can be substituted, and these resources cannot form sustained competitive advantage (Barney, 1991). In addition, the contemporary version proposes to add organizational processes to the required attributes of the sustained competitive advantage (Barney and Clark, 2007; Barney and Hesterly, 2012). This new attribute means that a company is able to use the available resources in a most beneficial way for the company. Therefore, according to the contemporary version of RBV, it can be concluded that there are four conditions to judge if a resource has the capability to produce sustained competitive advantage. Hence, sustained competitive advantage is generated if resources are valuable, rare, imperfectly imitable, and exploitable by the company's organization (Barney and Hesterly, 2012).

The first condition of sustained competitive advantage is that the company resources are valuable. Company resources are defined as valuable when they generate more net revenues or less net costs when compared with the situation that the company does not possess these resources (Barney and Arikan, 2001). In addition, company resources can be defined as valuable when they facilitate that the company applies strategies leading to efficiency and effectiveness (Barney, 1991). Moreover, based on the strength, weakness, opportunity, and threat (SWOT) framework, resources are called

valuable if the firm use an external opportunity or offset an external threat with the availability of these resources (Barney and Hesterly, 2012; Barney, 1991). Hence, the valuability attribute of the resources can be achieved with different ways. But, having a valuable resource is not enough to create a sustained competitive advantage as the other firms might have the same resource as well (Kozlenkova et al., 2014). Therefore, the other conditions for sustained competitive advantage are needed.

The second condition of sustained competitive advantage is that the company resources are rare. The rareness of a resource means that the resource is possessed by a few firms (Barney and Hesterly, 2012; Barney, 1991). If a valuable resource is not rare, then it means that other competitors might have the same resource and use it to their advantage (Barney, 1991). This results in competition between these firms and no one will get the competitive advantage. Therefore, having a rare resource is one of the conditions of the sustained competitive advantage.

The third condition of sustained competitive advantage is that the company resources are imperfectly imitable. Barney (1991) notes that “valuable and rare organizational resources can only be sources of sustained competitive advantage if firms that do not possess these resources cannot obtain them.” These resources are called imperfectly imitable in language developed by Lipmann and Rumelt (1982) and Barney (1986). This means that the resources, which are imperfectly imitable, cannot be easily obtained or created by other competitors due to high cost issues (Barney and Hesterly, 2012) or other reasons. Additionally, it is not possible to obtain the imperfectly imitable resources through any copying activity by the competitors. Therefore, imperfectly imitability condition is very important. For example, even a company possesses resources which are valuable and rare, but not imperfectly imitable; then the competitive advantage generated by these valuable and rare resources cannot last forever (Kozlenkova et al., 2014) because these resources can be obtained by the competitors at any time. Hence, the competitive advantage gathered by the valuable and rare resources will terminate when the other competitors obtain these resources. In other words, because these resources are not imperfectly imitable, these resources can be imitated and possessed by the competitors. However, if a resource is valuable, rare, and also imperfectly imitable, then this resource generates sustained competitive advantage (Kozlenkova et al., 2014). In this case, the valuable and rare resources are

only possessed by that company which secures its resources by the imperfectly imitability features against any imitation by the competitors.

The fourth condition of sustained competitive advantage is that the company resources are exploitable by the company's organization. The last attribute refers that even the company possesses valuable, rare, and imperfectly imitable resources, the company should use the total capacity of the resources and capabilities for its competitiveness (Barney and Hesterly, 2012). This suggests that the unsuccessful activities of an organization might decrease its competitive advantage of a resource obtained from the first three conditions (Barney and Clark, 2007). Therefore, the company is a fundamental parameter defining the complete realization of the advantages of valuable, rare, and imperfectly imitable resources (Barney and Clark, 2007).

Among these four conditions of sustained competitive advantage, imperfectly imitability condition is one of the most difficult ones. It can only be achieved by implementation of isolating mechanisms (Barney, 1991). These isolating mechanisms protect the company resources and capabilities from any imitation and create barriers to imitation (Morgan, 2012). In a dynamic environment, the sustainability of the positional advantages becomes crucial (e.g. Day and Wensley, 1988). The sustainability can be achieved through utilizing the tools which secure the competitive advantage (Hooley et al., 2001). Hence, the tools which prevent that the positional advantage of a company does not get lost against its competitors, are called isolating mechanisms (Rumelt, 1984). Hence, key resources of a company generate competitive advantage at a level of the isolating features which the resources exhibit (Hooley et al., 2001). The isolating mechanisms contain causal ambiguity (Barney, 1991), path dependence (Teece et al., 1997) and unique historical conditions (Barney, 1991), and social complexity (Dierickx and Cool, 1989).

Among the isolating mechanism for imperfectly imitability, causal ambiguity refers to the complexity that the competitors face when determining how the advantage is gained through the resources (Hooley et al., 2001). If the other companies do not understand the relationship of the resources and the company's competitive advantage very well, then causal ambiguity occurs (Barney, 1991). When the comprehension of this link is weak by the other companies, then imitation is hard. This is because the other companies cannot discover exactly which resources to copy to gain the same competitive advantage as the company which they want to imitate. But; if even one of

the competitors understands this relationship, in time this knowledge will be penetrated to the other competitors causing the imperfectly imitability to terminate (Barney, 1991). Therefore, all competitors should be lacking of the information about the link between the sustained competitive advantage and the firm's resources in order to keep their position in the sector. The link between causal ambiguity and imperfectly imitability has been supported in several studies in the literature (Lippman and Rumelt, 1982; Reed and DeFillippi, 1990; Rumelt, 1984).

Another isolating mechanism is path dependency and unique historical conditions. Path dependency identifies the necessity to proceed through time dependent steps (Hooley et al., 2001). That means, in order to obtain the same advantage, the competitors need to follow the same steps as the company they want to imitate. Unique historical conditions, on the other hand, refer that the acquirement and the deployment of some resources are time and location dependent (Barney, 1991). This means that, when this special time and location just change, these resources cannot be imitated by the competitors. As a result, these resources become imperfectly imitable.

The other isolating mechanism is social complexity. The social complexity claims that the resources are social phenomena which cannot be influenced by the companies (Barney, 1991). Consequently, this kind of resources is hard to be copied by other competitors. The examples of some socially complex resources are the interpersonal relations within the firm (Hambrick, 1987), firm's culture (Barney, 1986), firm's reputation (Porter, 1980), and firm's customers (Klein and Lefler, 1981). Hence, if the competitive advantage of a company is based on such socially complex resources, it is too difficult for the competitors to imitate them.

In addition, there is an economic perspective for the imitations. Economic perspective refers to the cost to imitate and legal barriers related to the several rights and patents (Hooley et al., 2001). Thus, as much as the companies keep their resources and capabilities under the protection of legal barriers, their competitive advantage gets more secured. Therefore, becoming owner of the rights and patents of special resources and capabilities is quite important.

The role of the isolating mechanisms is to enable the companies to sustain the positional advantages against their competitors (Morgan, 2012) by keeping the resources away any attempt of competitors to imitate (Hooley et al., 2001). Hence, all these isolating mechanisms help the companies to have imperfectly imitability

condition for its resources. Thus, the companies become capable to protect their resources from any imitation of its competitors. However, apart from the all related conditions and isolating mechanisms for the sustained competitive advantage, there is another important factor which influences the competitive position of a company. This factor is the selected target market. In order to fulfill the needs of the target customer, the companies create appropriate competitive advantages (Hooley et al., 1998). Hence, the competitive position is achieved in the respective market (Hooley et al., 1998) and created based on the selected target market (Hooley et al., 2001). Therefore, the target market selection has an important impact on the competitive position of the company.

Companies can develop competitive strategies by integrating available resources with the capabilities of the organization (Day, 1994). Positional advantages are then gained as a result of these competitive strategies where these positions show the relative market position of the organizations versus their competitors (Day and Wensley, 1988; Kerin et al., 1990). Therefore, becoming owner of the special resources and developing related capabilities for effective usage of these resources are crucial for the success in the market place.

4.3 Firm Resources and Capabilities

4.3.1 Resources

Resources and capabilities are the main constructs in resource-based theory (Kozlenkova et al., 2014). In the traditional strategy literature, the resources are defined as the firm's strengths which are used to build and apply the strategies of the company (Porter, 1981). In the same vein, Barney and Arikan (2001) state that resources refer to the tangible and intangible assets which are employed by the company for the development of its strategies and achievement of its targets. With a more conclusive definition, Barney (1991) claimed that the resources of a company contain all assets, capabilities, organizational processes, attributes, information, and knowledge which enable the company to apply the strategies enhancing the efficiency and effectiveness (Barney, 1991).

As Morgan et al. (2002) state there are different types of marketing resources. These resources can be listed as physical resources like the plant and equipment of the firm (Möller and Anttila, 1987), reputational resources like the brand image (Aaker, 1989),

human resources (Aufreiter et al., 1996) like the training, experience, intelligence, and knowledge of the people of the firm, organizational resources like culture (Moorman, 1995), financial resources like marketing budget (Hunt and Morgan, 1995), informational resources like market data (Glazer, 1991), relational resources like the relationship with customers, suppliers and channels (Srivastava et al., 1998), and legal resources like patents (Barney, 1991). All these resources have different areas of implications and different type of impacts on the activities of the company.

4.3.2 Capabilities

Capabilities, on the other hand, are the subgroups of the resources where a capability refers “an organizationally embedded non-transferable firm specific resource whose purpose is to improve the productivity of the other resources possessed by the firm” (Makadok 2001, p. 389). Capabilities can be tangible or intangible processes facilitating the usage of a company’s resources in a more efficient way leading to an increased productivity of the resources (Kozlenkova et al., 2014). Therefore, it can be said that capabilities are a type of the resources whose role is to enhance the efficiency of the other firm resources (Makadok, 2001). Sometimes, the resources and the capabilities might get mixed. However, there is a clear distinction between them. The capabilities are defined as the abilities connecting and holding the resources together which perfectly coordinates the activities (Hooley et al., 1998).

According to the resource-based view, the resources and the capabilities of the firm are the sources of advantage (Day and Wensley, 1988). The resources are the assets which are employed as inputs to the processes (Srivastava et al., 1998). However, possessing advanced resources is not enough for improved performance (Morgan et al., 2002). The determining factor for the superior performance is how these resources are converted into precious results with engaging the capabilities (Porter, 1996). Thus, capabilities are the binding processes altering the resources into valuable outputs (Vorhies and Yarbrough, 1998). Capabilities can arise in different levels in the organization. Hooley et al., (1998) draw a classification of capabilities according to two dimensions. According to the first dimension, capabilities are defined as individual, group, and corporate capabilities. According to the second dimension, the capabilities are defined as strategic, functional, and operational capabilities.

The first dimension divides the capabilities as individual, group, and corporate capabilities. Hence, the individual capability means the competencies of the individuals when executing their role in the organization. Group capabilities, on the other hand, refer to the abilities of the specific groups such as marketing department to realize particular objectives. The corporate capabilities are the competencies regarding the formation of the organizational path and management of the resources. Undoubtedly, the capabilities referring to the corporate level of the company are more effective on the competitive advantage of the company. However, the group capabilities can also create significant differences for the competitive advantage.

The second dimension divides the capabilities as strategic, functional, and operational capabilities. Strategic capabilities refer to the strategic abilities of top management regarding the environmental sector developments which have impact on the company. These abilities are supporting the organizational learning and enabling organizational development. Without these capabilities, the companies might face difficulties when adapting to the environmental changes. Operational capabilities, on the other hand, are the skills which enable the people in the organization to fulfil their tasks (Hooley et al., 1998). These capabilities are influential on the operational excellence of the company. Functional capabilities are the abilities which deal with the functions and processes. Day (1994) made the classification for these capabilities such as inside-out, outside-in and spanning capabilities.

Outside-in capabilities are the competencies whose central point is outside the organization. The goal of these capabilities is to create a connection between the organizational processes and the external environment aiming to get advantage over the competitors by satisfying the requirements of the market through the development of sustainable relations with customers, channel members, and suppliers. These capabilities contain market sensing, customer linking, channel bonding, and technology monitoring skills. Market sensing skills are the abilities to follow the market developments through applying marketing research and using the gathered information within the organization. Customer linking skills are the competencies enabling the creation of closer relationships with the customers. Channel bonding capabilities relate the function with the distribution related activities. Technology monitoring capabilities refer to the abilities to follow the new developments in the technology. Inside out capabilities refer to the competencies disposed from inside out

to satisfy the market needs. These capabilities contain skills regarding financial management, cost control, technology development, integrated logistics, manufacturing processes, human resources management, and environment health and safety. Spanning capabilities are the skills which are combining the outside-in and inside-out capabilities. These capabilities refer to customer order fulfilment, pricing, purchasing, customer service delivery, new product/service development, and strategy development.

Every type of the capability serves to a specific area of the company. Hence, banded all these capabilities together, they carry the company to a level of the competitive position according to the competitive advantages gained through them. Therefore, they play an important role in the competitive environment of the company. Naturally, when marketing activities are concerned, then all the marketing related resources and capabilities become more important.

The above-mentioned capability categories refer to all the types of capabilities in a company. However, the marketing related capabilities are the capabilities which originate from the marketing related processes (Hooley et al., 1998). From this point of view, Hooley et al. (1998) defined the key marketing capabilities based on the resource-based view literature. They refer to three categories of marketing capabilities; such as strategic marketing capabilities, functional marketing capabilities, and operational or task marketing capabilities.

According to the classification of Hooley et al. (1998), strategic marketing capabilities consist of market sensing capability and market targeting and positioning capabilities. The market sensing capability refers to the information gathering ability about the external environment. The content of this information refers to the customers, competitors, and the environmental changes. The market sensing capabilities include the abilities related to the marketing research and competitor analysis. These capabilities enable the companies to be informed about their customers, competitors, and changes in the external environment so that they can take necessary actions based on this information in order to meet the situational needs. There might be new opportunities or threats which can be discovered with the consistent marketing research and competitor analysis. From this point of view, these capabilities hold a significant importance. The other strategic marketing capability is market targeting and positioning capabilities. The market targeting and positioning capabilities refer to

the abilities to determine the opportunity options and then make a selection of the appropriate market targets (Hooley et al., 1998). This selection should be done with an approach to make the best selection which is matching with the capabilities of the company. These capabilities include the abilities related to several functions such as research and development (R&D), finance, and the top management. These capabilities enable the company to make appropriate targeting and positioning to fulfill the market needs with the proper management of the company functions.

The functional marketing capabilities, on the other hand, include customer relationship management, customer access capabilities, product management capability, and new product development capability. Customer relationship management capability denotes to the abilities related to the acquirement, retention, and expansion of the customers. These capabilities enable to track the needs of the customers in order to increase the satisfaction level of the customers. Therefore, customer management is one of the priorities of a company. Customer access capabilities denote to the abilities related to the employment of the existing channels and also development of the new channels to access the customers. These abilities cover the competencies related to the efficient management of the traditional distribution channels as well as employing franchising networks and electronic channels. Distribution is one of the most important factors on sales response. Therefore, these capabilities have a direct impact to meet the needs of the customers. The companies should closely track and discover the behaviors of their customers and accordingly, they should choose the most proper channels to meet with their target customers. Product management capability, on the other hand, refers to the abilities related to the management of the existing products. The management of these products needs to be done in several terms such as stock management, pricing, etc. Hence, right strategies need to be applied when implementing these strategies. New product development capabilities refer to the abilities related to the innovation and development of new goods and services. New product and service development abilities enable the companies to differentiate from their competitors in the market. Therefore, these capabilities offer new opportunities for the companies.

The last classification of marketing capabilities is operational or task marketing capabilities. These capabilities refer to the implementation of the marketing related activities such as promotions, public relations etc. Hence, even the right strategies are

developed, the implementation of these strategies identifies the ultimate outcome. Therefore, the success level of the implementation of the marketing related activities directly affects the success level of the marketing actions. Hence, based on the all owned resources and capabilities, a company enhances its performance and develops a competitive advantage. This competitive advantage provides a competitive position for the company in the market place.

The company resources and capabilities are strategic inputs directly or indirectly influencing business performance of the companies in general, marketing performance in particular. Before examining the role of the marketing related resources and capabilities empirically, the whole chain consisting of marketing related factors will be discussed in the following chapter.



5. LINKING MARKETING WITH BUSINESS PERFORMANCE

Marketing has an important task in interpretation of firm's business performance (Morgan, 2012). As the marketers are pushed to justify the value of the marketing activities and the corresponding budgets, the need to create the linkage between marketing and business performance becomes particularly essential (Morgan, 2012). To respond to this need, researchers made progress over the past two decades in understanding of marketing's role to obtain competitive advantage by showing the relationship between firm's marketing and business performance (e.g. Morgan, 2012; Rust et al., 2004a; Gupta and Zeithaml, 2006; Katsikeas et al., 2016; Srinivasan et al., 2010; Lehmann and Reibstein, 2006; Stahl et al., 2012).

The business performance of a company has two main aspects: one is the market performance which shows the target customer's responses to the company such as sales, market share etc. and the other one is the financial performance which can be defined as the cost of the achieved position of the company measured by the financial indicators such as profit, return on investment (ROI) etc. (Day, 1994; Day and Wensley, 1988). These performance outcomes change according to the utilized marketing strategies and marketing tools. Therefore, it is crucial to understand the relations between marketing actions and business performance outcomes but also with inclusion of the intermediary factors (e.g. Pauwels et al., 2004). With the investigation of this chain of relationships, the companies can better shape their marketing strategies according to their business goals.

There are several studies on marketing productivity showing the link between marketing actions and the business performance. The study of Rust et al. (2004a) is one of these studies representing a model which indicates how marketing activities affect the shareholder value. The productivity chain starts with the marketing strategies. These strategies might include promotion strategy, product strategy or any other marketing strategy. These strategies lead to marketing actions such as advertising campaigns, loyalty programs or other marketing actions to create a marketing impact. The goal of the marketing actions is definitely to touch the customer and to create a

positive impact on the customer mind. All these marketing actions aim to enhance the customer satisfaction which will be followed by a positive attitude towards the brand. This positive attitude is targeted to turn into an increased level of customer loyalty and enhanced level of the other customer-centered elements. Ultimately, the brand value is targeted to be increased by all the correctly applied marketing actions (Rust et al., 2004a). The impacts of these marketing actions on the customers can be measured by aggregated measures called marketing assets. These measures include the indicators of brand equity and customer equity (Rust et al., 2004a) which are based on the customer perceptions to the brand. Hence, the marketing actions make changes in customer perceptions and their mental states, but they may have not yet turned into accounting-based indicators. Therefore, marketing assets can be treated as the early signals before marketing activities turn into the company's financial numbers. After the customer is exposed to such marketing actions where his mindset is altered by these effects, he shows various behaviors which are resulted in different market impacts such as sales and market share defining the market position of the firm (Rust et al., 2004a). Subsequently, the market position affects the financial position of the company where the market-based indicators such as sales and market share turn into the financial measures such as profits, cash flows etc. (Rust et al., 2004a). Ultimately, the financial position of the company affects the shareholder value. Hence, describing all these relations, Rust et al. (2004a) create a marketing productivity chain with its intermediary factors.

Another conceptual framework linking marketing and business performance is developed by Morgan (2012). In his study, the author synthesizes some of the theories in strategic management with the marketing strategy literature by linking marketing resources, capabilities, strategy, and business performance. The model starts with the marketing resources and marketing capabilities. Marketing resources are the assets which can be turned into marketing capabilities and consequently create valuable outputs. Hence, marketing capabilities are developed when the resources are altered in order to achieve the business goals of the company (e.g. Collis, 1995; Mahoney and Pandian, 1992). In order to deploy these resources and capabilities, wisely formulized marketing strategies are needed. Therefore, the model includes marketing strategy as an important parameter. The valuable marketing strategies are created in accordance with the resources and capabilities in order to reach the business goals. However, the

development of a marketing strategy is not the only indicator for a business success, but also the ability to execute the marketing strategy decisions plays an important role for achievement of the goals (e.g. Day and Wensley, 1988; Varadarajan, 2010). As a result of the marketing strategy decisions and implementations, a value is created for the target customer and therefore positional advantages related to product, service, price, cost, image, and delivery are generated (Day and Wensley 1988; Morgan et al. 2004). The important issue at this point is to be able to sustain these positional advantages (e.g. Day and Wensley, 1988). Hence, the isolating mechanisms define the sustainability of the positional advantages according to the level of the inimitability (e.g. Lippman and Rumelt, 1982) and non-substitutability (e.g. Collis, 1995) of these advantages by the competitors. Ultimately, all the positional advantages developed through the whole chain have resulted as a business performance which is measured by market performance and financial performance. In this model, the market performance is measured by the indicators such as sales, satisfaction, retention, and share, and financial performance is assessed by the measures such as cash flow, costs, margin, profit, ROI, market value, and stock risk (Morgan, 2012).

As mentioned above, there are several models in the literature displaying the impact of marketing on business performance. In the same vein, Katsikeas et al. (2016) recently developed a conceptual model by integrating the previous conceptual studies in the literature (Rust et al., 2004a, Keller and Lehmann, 2006; Morgan, 2012; Petersen et al., 2009). The proposed model represents a kind of a chain model describing the main steps leading to the operational and organizational marketing performance outcomes. The operational performance is defined as the achievement of the goals in different value-chain activity areas of the company such as marketing, purchasing etc. The operational performance then leads to organizational performance which refers to “the economic outcomes resulting from the interplay among an organization’s attributes, actions, and environment” (Combs et al., 2005, p. 261). The model begins with the marketing resources, marketing strategies, and actions which constitute the base of the marketing activities (Rust et al., 2004a). It is assumed that the first step of value chain is related with marketing (Combs et al., 2005). After customer is exposed to the marketing activities of the company, the perceptions of customers are changed with the impact of the marketing actions. With these perceptions, customers respond to these actions in terms of their behaviors and attitudes (Keller and Lehmann, 2006).

In these responses, the preexisting knowledge about the market-based assets of the company can also affect the perceptions and behaviors of the customers (Homburg et al., 2005). All these behavioral and attitudinal responses are referred to as an outcome of the customer mindset. Accordingly, customers shape their purchase and post purchase behaviors which result in market performance assessed by the measures such as unit sales, market share etc. (Rust et al., 2004a). Hence, the development of the customer mindset and obtaining a market performance in return are referred to operational performance in the model of Katsikeas et al. (2016). As mentioned above, operational performance is followed by organizational performance which includes accounting performance and financial performance respectively. Accounting performance includes the performance measures such as sales revenue, revenue growth, cost, profit, margin, cash flow, and financial performance refers to the measures such as investor returns, equity risk, credit rating, cost of capital. Hence, this whole marketing-performance chain describes the impact of marketing activities on performance outcomes. However, this marketing performance chain is not a static tool in terms of two aspects (Katsikeas et al., 2016). The first one is that the firms feed their resources with investments in order to keep and enhance their marketing resources and capabilities (Srivastava et al., 1998). Thus, the resources might change in time. The second one is, firms increase their insight and knowledge along the marketing performance chain, and according to this knowledge, they modify their marketing resources and marketing actions (Morgan, 2012). This kind of adjustments can occur in any level of the marketing-performance chain where the companies see the necessity (e.g. Chakravarty and Grewal, 2011). Hence, the usage of such a marketing-performance chain is very useful from a company point of view. On one side, the marketing-performance chain enables the companies to assess the success of their marketing performance, and on the other side, it allows the companies to make adjustments for self-improvements. Hence, the marketing performance can be held under control in all levels of the chain, and actions can be taken according to the performance results. The sections below will discuss the steps of this chain in detail.

5.1 Marketing Strategies and Activities

Marketing activities and strategies are the initial step in the marketing productivity chain (Rust et al., 2004a). Marketing strategy has a key importance in creating

sustainable competitive advantages and accordingly generating business performance (Srivastava et al., 1999). As claimed by Rust et al. (2004a), one of the strategic function of marketing is determining the strategic route for the organization and therefore directing the investments in order to build and improve the marketing assets to generate sustainable competitive advantage. The brands which manage to differentiate from the others in terms of their marketing strategies enjoy several benefits such as charging higher prices (Farquhar, 1989), gaining higher market shares (Boulding et al., 1994), getting higher response rates from advertising and promotions (Keller, 1998). There are two main aspects on which marketing strategy success depends on; marketing strategy decisions and marketing strategy implementation (Morgan, 2012).

In general terms, the aim of the marketing strategy decisions is to set the priorities and to define the related resource deployment in order to achieve the company goals (Slater, 1995). These marketing strategy decisions cover strategic marketing objectives, target market selection, value proposition, and timing (Morgan, 2012). The first marketing strategy decision is related to strategic marketing objectives of a firm which are the interpretations of the firm's business objectives and priorities in terms of marketing-related goals and setting the desired achievement levels for each marketing goal. However, the achievement of all the objectives at the same time is not an easy job. Therefore, these objectives need to be prioritized. Hence, these decisions about objective selection constitute one of the most important parts of the strategic path (Child, 1972). The right and realistic choice of the company targets will increase the achievability of the targets. The second marketing strategy decision is related with the target market selection. This involves the segmentation and targeting decisions of the marketing strategy. This decision covers identification of the target customers and the products and services which are offered to them. The success of a marketing strategy highly depends on the right identification and choice of the target market. The third marketing strategy decision is value proposition. This refers to the selection of the specific product and service offerings which is to be delivered to the target market (Slater, 1995). With these aspects, this decision is an identification of the value offering for the target customers at a defined price point. This decision, therefore, involves the determination of the specific resources and capabilities to be used in order to create the value proposition. In this decision, the needs of the target market should be clearly defined and offerings should be created to fulfill these needs. The fourth

marketing strategy decision is timing. Timing is an important decision for all the marketing strategies such as when the firm enters to a new target market or offers a value proposition (e.g. Green et al., 1995; Lieberman and Montgomery, 1998). Timing can fully change the success level of the marketing strategies depending on occasional opportunities or threats. Hence, the selection of the timing may change the results of the marketing strategy decisions.

However, without a successful implementation, the marketing strategy decisions don't lead to company success. Therefore, marketing strategy implementation is as important as marketing strategy decisions. The implementation of marketing strategy is defined as the most appropriate set of marketing tactics and accordingly deploying marketing resources in order to realize the marketing strategy decisions (e.g. Cespedes, 1991; Day and Wensley, 1988). Therefore, an effective marketing strategy decision implementation involves the issues both to build an appropriate marketing program and to allocate the related resources in a most efficient way to apply the marketing program (e.g. Cespedes, 1991; Day and Wensley, 1988). Here, the creation of a marketing program refers to translating each marketing strategy decision into specific action-oriented tactics (Bonoma, 1985; Cespedes, 1991). But of course, translating the strategic decisions into more concrete tactical marketing actions is not easy. As there are several options for different marketing programs for the realization of the marketing strategy, the alternatives need to be evaluated strategically and the most effective one should be selected (Morgan, 2012). Therefore, in order to make the right choice and apply the right strategies, the prerequisite is to understand the factors which are effective on customer behaviors. Accordingly, the allocation of the resources should be done to the right customer, at the right time, with the right offer (Rust et al., 2004a). Therefore, the definition of a concrete marketing program is not enough alone, rather the resources and capabilities for the application of this program need to be identified, since the success of the realization of a marketing program is directly linked to the deployment of the resources and capabilities to be used for this marketing program actions (e.g. Crittenden and Crittenden, 2008; Galbraith and Kazanjian, 1986). Hence, the success level of a marketing program depends on how efficiently the resources are allocated for each marketing action and how wisely the capabilities are used to enact the marketing strategy decisions. In addition, the performance analysis of marketing strategies provides an insight what kind of impacts the marketing

decisions create on the market performance and financial performance (Rust et al., 2004b). This information can later be used as a guideline when creating future marketing strategies and deciding on future marketing objectives. Apart from the strategic approach, the measurement of marketing performance at tactical level can be executed by examination of individual tactical marketing actions. So that, the impact of the specific marketing actions can be understood by identifying the effective and non-effective marketing actions. With this knowledge, more effective marketing actions can be planned for the future marketing programs.

When creating marketing strategies and practicing the marketing programs related to these strategies, the companies should keep in mind that one of the most valuable assets for any company is the intangible assets represented by its brands. Therefore, the management of their brands, in other words, to enhance the value of their brand is very crucial. Keller and Lehmann (2003) proposed a brand value chain with several phases. According to the brand value chain (Keller and Lehmann, 2003), the brand value creation process begins with the marketing programs which are applied by the companies based on their marketing strategies. The marketing investments are directed to these marketing programs to reach to the defined target customers. After application of marketing programs, the marketing activities associated with the marketing program affect the customer mindset with respect to the brand. The knowledge and the feelings of the customers about the brand are constituted with all these influences generated with the marketing activities. Hence, the customer mindset involves everything that exists in the minds of customers with respect to the brand (e.g. thoughts, feelings, experiences, images, perceptions, beliefs, and attitudes). The customer mindset is the precursor of the brand performance since the customer behavior and attitudes are directly the outcomes of the customer's mindset (Keller and Lehmann, 2003). Therefore, companies should carefully define their marketing strategies keeping in mind that there is a relation between the marketing strategies and the customer mindset, which consequently leads to the brand value.

5.2 Impact of Marketing Activities on Customers

As mentioned above, in order to understand the impact of marketing activities and expenditures on customer behavior and attitudes, the mindset of the customer needs have to be examined. Based on the marketing literature, there are five key dimensions

of a customer mindset (Keller and Lehmann, 2003; Ambler et al., 2002). The first dimension is brand awareness. Brand awareness refers to the extent to which customers recall and recognize the brand and can identify the products and services associated with it. The second dimension is brand associations. Brand associations involve the “strength, favorability, and uniqueness of perceived attributes and benefits for the brand” (p.28). Brand associations often represent key sources of brand value, as they show how consumers feel about the satisfaction level of their needs by the brands. The third dimension is brand attitudes and all the assessments of the brand in terms of quality and the extent to which level it satisfies. The fourth dimension is brand attachment. It represents the loyalty of the customers to the brand. The attachment denotes the resistance to change the brand. The fifth dimension is brand activity. This dimension refers the extent to which customers are engaged with the brand in terms of the usage, information search etc. (Keller and Lehmann, 2003). All these dimensions of customer mindset are directly connected to brand equity. Therefore, the right customer mindset is very important to obtain the brand equity benefits and value (Keller and Lehmann, 2003).

Brand equity is the main marketing asset (Ambler, 2003; Davis, 2000). It builds a bridge between the company and its stakeholders (Hunt and Morgan, 1995) leading to a long-term relationship. In this relationship, there are many different influences of brand equity on the brand such as the brand equity has impact on the profits and cash flows (Srivastava and Schoker, 1991), consumer tendency to pay price premium (Keller, 1993), stock prices (Simon and Sullivan, 1993), sustainable competitive advantage (Bharadwaj et al., 1993), and marketing success (Ambler, 1997). Hence, it can be assumed that barely every marketing activity has an impact on brand equity either positive or negative way (Aaker, 1991; Keller, 1993; Yoo et al., 2000). Therefore, understanding the brand equity dimensions and improving them provides competitive position and brand goodness (Yoo et al., 2000). Due to the close relationship between the marketing activities and the brand equity, the dimensions of brand equity can be used as the indicators of the marketing performance (Ambler, 2003). Thus; by the beginning of 2000s, marketing researchers focused on this relationship and its impact on the business performance (Rust et al., 2004a; Srinivasan, 2015; Srinivasan et al., 2012; Stahl et al., 2012). In these studies, the relation between the marketing actions and the brand equity is clearly shown indicating that marketing

actions have a direct impact on brand equity. In their study, Rust et al. (2004a) claimed that the marketing actions influence customer attitudes and perceptions. Besides, Stahl et al. (2012) indicated that the marketing actions such as advertising, price, promotions drive brand equity. These models also indicate that the brand equity, which is an outcome of the marketing strategies and marketing actions, influences the market performance of the company which in turn leads to ultimate financial performance and firm value. Hence, it would not be wrong to say that the brand equity plays a mediating role between marketing activities and the business performance of the company. Similar to the approaches of these studies, this study integrates brand equity to its model as a parameter between the marketing activities and the business performance.

There is no doubt that all the firms investing in marketing programs would like to make profits and gain market share in return. Hence, all the marketing efforts which ultimately aim to generate profitability, first need to gain the minds and hearts of the customer (Kotler, 2003a). Where mind share is based on the cognitive evaluations of the customer, heart share is based on the emotions and feelings of the customer about a brand (Pitta and Franzak, 2008). These elements can be approached in terms of the cognitive, conative, and affective effects of communications (Fishbein and Ajzen, 1975). Mind share refers to the cognitive effects of the marketing activities, and heart share refers to the affective effects which are the outcome of the customer experiences and memories with the brand. Market share, on the other hand, represents the outcomes of the behavior (Pitta and Franzak, 2008). In this continuum, heart share stands in the middle between mind share and market share (Day, 1989) which occurs after mind share and leads to market share (Pitta and Franzak, 2008). That means, the brands which can create positive emotional connections and maintain this connections with the customer, will gain heart of the customer. Those brands, which gain and keep heart of the customers, will gain sustainable competitive advantage over its rivals in the market (Pitta, 2007). This can only be managed by the long-term investment of marketing. Therefore, the essence of marketing is not a short-term activity. Rather, companies make long term marketing investments by which they want to create long-lasting relationships with the customer. It is well known that the long-term impact of marketing is always higher than the impact of short-term marketing activities such as promotions, discounts, and any other one-shot activities. Thus, with the marketing investments, first the brand will gain the minds of the customer, then gain the hearts

and become a love brand by the customer, and ultimately gain market share over its competitor. The market performance, generated in this sequence, will at the end lead to financial performance of the company.

5.2.1 Brand equity

As mentioned above, brand equity is a significant indicator of marketing success (Reynolds and Philips, 2005) building a bridge between the company and its stakeholders (Hunt and Morgan, 1995) which leads to a long-term relationship with the customers.

Brand equity can be approached from different perspectives. As concluded by Srinivasan et al. (2012), there are three perspectives for brand equity: customer-based brand equity, market-based brand equity, and financial based brand equity. The first approach, customer-based brand equity, refers to the customer perceptions and responses which differ to a branded offer over the unbranded offer. This approach examines brand equity from customer point of view (Keller, 1993) and refers how the brand is valued by the customer (Taylor et al., 2007). It can be said that the customer-based perspective is the most commonly used brand equity approach among researchers and practitioners (Agarwal and Rao, 1996). Especially, marketing literature approached to the brand equity topic from this perspective and many researchers used this brand equity approach in their studies (e.g. Aaker 1991; Yoo and Donthu 2001; Keller 1993; Pappu et al., 2005; Christodoulides et al. 2006; Buil et al. 2008; Washburn and Plank, 2002; Ragaswamy et al. 1993). The most common used customer-based brand equity approaches belong to Aaker (1991, 1996b) and Keller (1993).

Aaker (1991) defined brand equity as “a set of assets and liabilities linked to a brand, its name, and symbol, that add to or subtract from the value provided by a product or service to a firm and/or that firm’s customers” (p. 15). Based on the definition of Aaker (1991), brand equity consists of five dimensions such as brand awareness, brand associations, perceived quality, brand loyalty, and other proprietary brand assets such as patents, trademarks, and channel relationships. Brand associations consist of the cognitive bonds which are created in the minds of the customers related to the brand (Keller, 1993). Perceived brand quality refers to the customer’s perception about the overall satisfaction of a product relative to the other alternatives (Zeithaml, 1988).

Brand loyalty is defined as “a deep-held commitment to rebuy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior” (Oliver, 1999, p.34). The customer-based brand equity perfectly covers the customer evaluations of the brand equity with these measures. However, this approach is criticized due to the lack of the measures which are related to the product-market performance and financial performance (Taylor et al., 2007).

The other widely accepted customer-based brand equity view belongs to Keller (1993). He defines brand equity as “the differential effect that brand knowledge has on consumer or customer response to the marketing of that brand” (p. 2). He also refers customer-based brand equity as a process where customer-based brand equity occurs “when the consumer is familiar with the brand and holds some favorable, strong, and unique brand associations in memory” (Keller, 1993, p. 2). Keller (1993) indicates that the most important asset to enhance marketing productivity is the knowledge regarding the brand established in consumer’s mind through the past marketing activities. Therefore, according to the framework of Keller (1993), brand equity is conceptualized from the individual consumer perspective based on the knowledge of the consumers about the brand. Hence, brand knowledge is defined as a core dimension of customer-based brand equity to which various associations of a brand is related. In this concept, brand knowledge is composed of two dimensions: brand awareness and brand image. Brand awareness represents brand recall and brand recognition from customer perspective. Brand image represents the brand associations in customer’s mind. According to the framework of Keller (1993), brand equity is conceptualized from the individual consumer perspective based on the knowledge of the consumers about the brand. The author indicates that the most important asset to enhance marketing productivity is the knowledge regarding the brand established in consumer’s mind by the past marketing activities, since the memories regarding a brand will impact the success of the future brand strategies (Washburn and Plank, 2002). Consequently, customer-based brand equity occurs when the customer has positive and distinctive associations in memory (Keller, 1993). Therefore, brand equity can be analyzed based on the knowledge, familiarity, and associations linked to the brand from customer point of view (Washburn and Plank, 2002). While, both of the customer-based brand equity

models take brand as a set of associations where positive associations enhance the value of the brand (Aaker, 1991; Keller, 1993), these approaches differ at the point where Aaker (1991) includes brand loyalty and perceived quality dimensions in addition to brand awareness and brand associations. In addition, Aaker's (1991) approach includes other proprietary dimension which enables to show the impact of the patents and trademarks on the brand equity.

Customer-based brand equity has been studied also by some other researchers and they concluded different conceptualizations. Among these conceptualizations, brand equity has been identified with different dimensions such as favorable impressions, attitudinal dispositions, and behavioral predilections (Ragaswamy et al., 1993), loyalty and image (Shocker and Weitz, 1988), incremental utility (Kamakura and Russell, 1993), and overall quality and choice intention (Agarwal and Rao, 1996). Besides, Park and Srinivasan (1994) approached brand equity as the difference between overall brand preference and multi-attributed preference based on objectively measured attribute levels. In addition, Lassar et al. (1995) constitute another framework including five factors: performance, social image, value, trustworthiness, and attachment. In addition, Aaker and Joachimsthaler (2000) make a simplification of the Aaker's model and include only four dimensions such as brand awareness, perceived quality, brand associations, and brand loyalty. Moreover, Yoo and Donthu (2001) suggest a ten-item operationalization of the brand equity construct based on three dimensions of brand loyalty, perceived quality, and brand awareness/associations by testing Aaker's (1991) and Keller's (1993) conceptualizations (Taylor et al., 2007). Keller (2003) later proposed a customer-based brand equity model consisting of six-factors: brand salience, brand performance, brand imagery, brand judgments, feelings toward the brand, and resonance. As it can be seen by all the contributions, the customer-based brand equity is approached in terms of the customer-based perceptions about the brand personality.

The second brand equity approach, market-based brand equity, defines brand equity as the value-added market performance of a branded offer over an unbranded offer (Srinivasan et al., 2012). Some researchers believe that the value of the brand should be determined ultimately in the marketplace (Hoeffler and Keller, 2003). The metrics which can be used to determine the marketplace performance involve the metrics such as sales, profit, market share, price premium, revenue premium, increased advertising

elasticity, and the ability to obtain distribution channel and shelf space (Boulding et al., 1994). Among these metrics, price premium is the most commonly preferred metric (Aaker 1992, 1996b; Chaudhuri and Holbrook 2001). This metric measures the extent how much a customer pays more for a branded product versus a private label product. The price premium delivers a brand increased profits and generates resources for reinvestments of the brand (Aaker, 1992). Aside price premium, revenue premium is another metric which is preferred by some researchers to assess brand equity (Ailawadi et al., 2003). This metric approaches similar to price premium and refers to the difference in revenue for a branded product versus an unbranded product. Even the market-based brand equity metrics are quite comprehensive in terms of covering the market performance of a brand, but still; same as customer-based brand equity approach, this approach of brand equity is not capable to create the linkage between branding and shareholder value which is the ultimate determinant of the firm performance (Srinivasan et al., 2012).

The third brand equity approach, financial based brand equity, approaches brand equity as a tradable asset (Srinivasan et al., 2012). Christodoulides and Chernatony (2010) claim that financial perspective of brand equity focuses on the financial value generated by brand equity which is the result of customer response. Thus, financial perspective of the brand equity refers how differently customer responses to the marketing activities of the company from a financial point of view (Taylor et al., 2007). In this approach, the value of the firm is divided into tangible and intangible assets. Brand equity refers to the intangible assets among these assets (Srinivasan et al., 2012). It is a source of future profits and cash flows which are the outcome of the past marketing investments (Ambler, 2003). Additionally, brand value is an important indicator for a company and stands in the financial outlook of the company for investment purposes (Barth et al., 1998). With these aspects, financial based brand equity is one of the most broadly applied brand equity approach with the customer-based brand equity. Hence, several researchers used this approach in their studies (e.g. Simon and Sullivan, 1993; Mahajan et al., 1990; Farquhar et al., 1991). This brand equity approach is preferred due to its long-term approach, rather than basing the calculation on short-term metrics such as sales, profits, market share. However, this approach is still criticized due to subjectivity and lack of strong theoretical base (Srinivasan et al., 2012).

All the three approaches of the brand equity have different perspectives for the brand valuation. The researchers and the practitioners can use each approach based on the evaluation perspective of the brand. In this study, the brand equity is approached from the customer point of view. Hence, the dimensions of the Aaker's (1991) customer-based brand equity approach are used for the constitution of brand equity variable. From the dimensions of brand equity, other proprietary dimension, such as patents, trademarks, and the perceived quality dimensions are excluded in this study. Hence, this study constitutes the brand equity variable based on the customer perceptions. These dimensions are discussed in detail below.

5.2.2 Dimensions of brand equity

Brand awareness

Brand awareness is one of the dimensions of brand equity. Aaker defines brand awareness as “the ability for a buyer to recognize or recall that a brand is a member of a certain product category” (Aaker, 1991, p. 61). Hence, brand awareness contains brand recognition and recall (Keller, 1993). In other words, brand awareness construct is linked to the level of brand's presence in consumer's mind and assessed through brand recognition and brand recall (Keller, 1993; Aaker, 1996b). According to Keller (1993), brand recall denotes to retrieving the brand from memory and brand recognition refers to the ability to discriminate the brand.

Keller (2009) states that marketing activities serve to the customer-based brand equity through generating awareness of the brand. This is done by creating relations between associations and brand image in consumer's mind which leads to brand judgements and feelings. These judgements and feelings then result in a stronger consumer-brand linking (Keller, 2007). As brand awareness is a component of brand knowledge according to the Keller's (1993) brand equity approach, it can be concluded that marketing communication activities can influence consumer brand knowledge in several ways and consequently affect brand equity (Keller, 2009).

Brand loyalty

Brand loyalty is the other dimension of brand equity. Aaker (1991) defines brand loyalty as “the attachment that a customer has to a brand” (p. 39). There are two types of loyalty: behavioral (Oliver, 1997) and attitudinal loyalty (Rossiter and Percy, 1987). Behavioral loyalty focuses on commitment to exhibit a repeat purchase of a brand as

the first choice (Oliver; 1997). Attitudinal loyalty, on the other hand, denotes to the intention of the consumer to buy a brand as a primary option (Yoo and Donthu, 2001). Hence, both types of loyalty have an impact on the brand equity.

Another definition by Aaker (1991) for the brand loyalty refers to the probability of a customer to switch to a different brand when the other brand holds different product attributes and price level.

From this perspective, brand loyalty secures the consumer to buy a brand regularly and show resistance switching to other competitors (Yoo et al., 2000). As a consequence, brand loyalty has a significant influence on marketing expenses as the marketing expense for holding old customers is lower than gaining new customers (Aaker, 1996b).

There can be different reasons why a consumer holds a favorable attitude to a certain brand. These reasons can be based on the various factors such as demographic, economic, psychographic characteristics and the environmental parameters (Jacoby and Kyner, 1973). Hence, based on these various factors, the consumers build up loyalty with the brand.

Perceived quality

Another dimension of brand equity is perceived quality. Perceived quality is “the consumer's judgment about a product's overall excellence or superiority” (Zeithaml, 1988, p. 3) which means that this construct refers to consumers’ subjective evaluations regarding product quality. From this perspective, perceived quality is considered as the core aspect of customer-based brand equity frameworks (Aaker, 1996b; Keller, 1993). With these aspects, perceived quality is different than objective quality, since this evaluation is a subjective assessment of a brand from customer point of view (Zeithaml, 1988).

The perceived quality is defined according to the different characteristics. These features determining the quality can be classified as intrinsic and extrinsic (Olson, 1977; Olson and Jacoby, 1972). The intrinsic attributes cover the physical aspects of the product and cannot be altered without changing the nature of the product and consumed when the product is consumed (Olson, 1977; Olson and Jacoby, 1972). Extrinsic attributes are also product related, but they do not depend on the physical product such as price, brand name, advertising (Zeithaml, 1988). Hence, the customers assess the related product or service as a whole which is composed of both intrinsic

and extrinsic attributes. Therefore, both types of attributes are important in defining the perceived quality.

Brand associations

Brand associations are the other dimension of brand equity. Aaker (1991) defined brand associations as “anything linked in memory to a brand” (p. 109). These can be beliefs, thoughts, and images related to the brand (Aaker, 1991). The main dimensions of brand associations include the image aspects which are unique to product class or to a brand (Aaker, 1996b).

Aaker (1996b) claimed that brand associations can be categorized according to three perspectives: brand as product (value), brand as person (brand personality), and brand as organization (organizational associations). The value proposition of the brand is examined under the perspective of the brand as a product. The brand value can be assessed through the questions of whether the brand delivers good value for money and whether there are any reasons to buy the brand versus its rivals. The second perspective of association, the brand personality association can establish a basis for a connection between customer and brand. This perspective generates a link to the emotional aspects of the brand. The third perspective of brand associations is the brand as organization perspective. This perspective focuses on the organization including the people, values, and programs behind the brand. With the impact of this perspective the brand is considered more than a product or service, but as the corporate brand. Hence, all these three perspectives enable the customers to associate with the brand.

5.2.3 Measuring brand equity

In marketing performance assessment concept, the measurement of marketing assets attracted an important attention (Srivastava et al., 1998), and the measurement of brand equity is referred in different types of research. Brand equity measurement reconciles short-term and long-term perspectives, therefore gets an important attention in marketing performance assessment literature (Ambler 2003; Clark and Ambler 2000). Keller (1993) highlighted the importance of examination of brand equity from customer point of view. He claimed that: “though the eventual goal of any marketing program is to increase sales, it is first necessary to establish knowledge structures for the brand so that consumers respond favorably to marketing activities for the brand” (p. 8). Thus, according to Keller (1993), the effectiveness of marketing mix is defined

by the level of customer-based brand equity. In addition, there are several studies in the marketing literature highlighting that marketing actions (e.g. advertising, price, promotions) directly affect the brand equity (Srinivasan et al., 2005). At this point, brand equity assessment becomes a critical evaluation which provides crucial feedback on the executed marketing programs. Therefore, the assessment of brand equity constitutes a guideline for marketing strategy and tactical actions (Ailawadi et al., 2003) with the proven results of the previous marketing programs. Therefore, brand managers need to understand and apply the methods of brand equity measurement (Ambler, 2003) quite well.

Among the brand equity measurement methods, brand equity measurement has been approached from two main perspectives, namely financial and non-financial. The financial approaches relate the brand to the stock value or to the long-term profitability (e.g. Aaker and Jacobson, 2001). On the other hand, the non-financial approaches look at the impact of the brand on consumer attitudes and behavior (e.g. Keller, 1993; Park and Srinivasan, 1994). Rust et al. (2004a) classified the non-financial approaches into three groups. The first approach is based on the measurement of buyer's knowledge about brands with free association tasks. The second approach consists of holistic techniques. Holistic techniques are referred to residual approaches where brand equity is measured by deduction which is reducing the impact of the other parameters and ascribing the residual impact to brand equity (e.g. Park and Srinivasan, 1994). The third approach involves techniques measuring the market performance to identify the value of the brand like Financial World and Interbrand (Rust et al., 2004a) and the other commercial measures including Millward Brown's BrandZ, Research International's Equity Engine, IPSOS's Equity Builder and Young & Rubicam's Brand Asset Valuator (BAV). All these approaches provide different perspectives of brand equity assessments. The selection of the assessment method depends on the perspective based on which the brand equity is needed to be defined.

5.3 Business Performance

The ultimate step of the marketing productivity chain is the business performance (Morgan, 2012). A detailed examination of the performance is discussed in the second chapter of this study. As mentioned before, performance is the core dimension of a company. It has many dimensions and can be examined in different perspectives. From

this point of view, business performance can be examined mainly in two perspectives; namely, market performance and financial performance (Morgan, 2012).

5.3.1 Market performance

Market performance deals with the feedbacks of the customer's purchase behavior (Morgan et al., 2002). The customers perceive a firm's value in a more positive way when a positional advantage is built relative to other competitors (Morgan, 2012). These positive perceptions affect the customer's buying behavior in a positive way for the firm (Narver and Slater, 1990) enhancing sales volume, increasing customer satisfaction and loyalty, lowering price sensitivity, and growing firm's market share (Morgan, 2012).

The impact of the marketing activities on the customer leads to changes in marketing assets such as brand equity and therefore affects the competitive market position of the firm through market share and sales. At this point, the successful brands build enhanced customer satisfaction and the perception of the value of the firm's offer will be high from customer point of view (Rust et al., 2004a). Hence, the consequence of such an offer leads to superiority of different dimensions of market performance (Srivastava et al., 1998) such as lower price elasticity (Boulding et al., 1994), customer loyalty (Srivastava and Shocker, 1991), price premiums (Farquhar, 1989), market share (Taylor, 2002), efficient marketing programs (Smith and Park, 1992), brand extensions (Keller, 1998), and profitability (Venkatesan and Kumar, 2004). Hence, the brands can enjoy their success in their marketing activities with several positive gains.

There are different approaches to examine the market performance. Market performance can be examined from customer, competitor, and internal perspectives (e.g. Day and Nedungadi, 1994). From customer point of view, market performance refers to customer responses which they make to the positional advantages gained by the firm. From internal perspective, market performance can be assessed in terms of unit sales or sales revenue as an outcome of customer behaviors. From competitor point of view, market performance can be indicated through mind share and market share. Hence, each perspective makes a different assessment approach by highlighting different strengths of the brand.

The market performance models are generally developed in quantitative research aiming to build the link between the marketing expenditures and the metrics such as

market share and sales (Hanssens et al., 1990). An important outcome of these studies is the fact that the long-term impact highly differs from short-term impact (e.g. Dekimpe and Hanssens, 1995). This difference comes from the characteristics of the marketing actions (Rust et al., 2004a). Some marketing activities like sales promotions, for example, show their effect faster but the produced impact can be low. Whereas, some marketing actions produce their impact slowly in time such as advertising. In addition, monitoring the competitive environment and responding with the correct actions becomes very crucial in the long-term perspective (Kumar, 1994). Therefore, marketing resource allocation studies examine the optimal level of the marketing investments of the marketers according to the customer segments and markets in terms of the marketing mix elements and marketing channels in order to gain higher profitability (e.g. Mantrala et al., 1992).

At the ultimate stage of the marketing productivity chain, the market performance of the company will be followed by the financial performance in terms of cash flow, profitability, and such financial indicators (e.g. Day and Fahey, 1988; Kaplan and Norton, 1992).

5.3.2 Financial performance

Financial performance is a focal dimension of the business performance (Morgan, 2012). Being able to affect the customer perceptions and attitudes are very significant indicators of the marketing efforts which in turn lead to the enhanced sales performance and market share. However, financial performance is considered the most important indicator to assess the marketing effort of a company. (Rust et al., 2004a). The financial position of a company is directly influenced by the marketing activities which are then resulted in terms of several financial measures such as profit, cash flow (Rust et al., 2004a). Therefore, the link between the marketing activities and their financial results should be discovered by the marketers.

The marketing expenditures are considered as investments. Therefore, the financial impact of marketing is an outcome of the gained revenue and the expenditure which is needed to generate this revenue. Thus, the financial outcome of these investments can be measured by the return on investment where the return can be expressed as the percentage of the expenditure (Rust et al., 2004a). Apart from ROI approach, there are different metrics which can be used to define the financial performance of the company

such as cash flow, profitability, financial market indicators of investor value (Srivastava et al., 1999), market value, stock risk (Morgan, 2012), investor returns, equity risk, credit rating, cost of capital (Katsikeas et al., 2016), market capitalization, Tobin's q (Rust et al., 2004a) etc. Hence, the financial performance can be measured from different perspectives reflecting the financial position of the company.

Table 5.1 provides some of the selected studies on linking marketing and business performance.



Table 5.1 : Selected studies of linking marketing and business performance.

Paper	Author, Year	Aim, Description	Independent Variable	Dependent Variable	Methodology	Industry	Type
Mindset metrics in market response models: an integrative approach	Srinivasan et al. (2010)	The aim of the study is to explore whether the involvement of the mindset metrics (advertising awareness, consideration, liking) to a sales response model, which is already containing the marketing mix actions, provides explanatory power? And if this is confirmed, this study aims to define the magnitude of the impact of the mindset metrics on sales and also the impact of the marketing actions on the mindset metrics.	marketing mix (advertising, promotions, price, distribution)	brand performance (sales volume)	vector autoregressive modeling (VAR)	FMCG	empirical
Marketing and business performance	Morgan (2012)	The paper integrates the three strategic management perspectives; namely, SCP (structure-conduct-performance), RBV (resource-based view) and DC (dynamic capabilities) with strategic marketing conceptualizations. The aim of the paper is to create a conceptual model linking marketing resources, capabilities, strategy, and business performance.	marketing resources and marketing capabilities	business performance (market performance, financial performance)	N/A	N/A	conceptual
Assessing performance outcomes in marketing	Katsikeas et al. (2015)	This paper develops a theory-based performance evaluation framework for marketing. Additionally, the authors provide a meta-analysis by examining the performance outcomes in 998 empirical studies published in the top 15 marketing journals from 1981 through 2014.	firm's marketing resources, strategy and actions	financial market performance (investor returns, equity risk, credit rating, cost of capital)	N/A	N/A	conceptual
Customer metrics and their impact on financial performance	Gupta and Zeithaml (2005)	The aim of the paper is to discover the unobserved metrics and the observed metrics, the linkages between these metrics, and their impact on financial performance.	marketing actions	financial performance	N/A	N/A	conceptual
Consumer attitude metrics for guiding marketing mix decisions	Hanssens et al. (2014)	The aim of the paper is to investigate how examining the attitude metrics (awareness, consideration, liking) contribute to the effectiveness of the marketing mix actions by quantifying the impact of marketing actions on the sales performance through the attitudinal metrics.	marketing actions	brand sales volume (sales volume)	CRE (cross-effects) models and longitudinal hierarchical linear models (HLM)	FMCG	empirical
Metrics making marketing matter	Lehmann (2004)	The paper refers to marketing productivity chain and some of the related studies which open new avenues in the topic of linking marketing with financial performance and firm value.	N/A	N/A	N/A	N/A	conceptual
Marketing and firm value: metrics, methods, findings, and future directions	Srinivasan and Hanssens (2009)	The study summarizes the empirical findings on how marketing creates shareholder value, including the impact of brand equity, customer equity, customer satisfaction, R&D, product quality and specific marketing mix actions.	N/A	N/A	N/A	N/A	conceptual

Table 5.1 (continued) : Selected studies of linking marketing and business performance.

Paper	Author, Year	Aim, Description	Independent Variable	Dependent Variable	Methodology	Industry	Type
Branding and firm value	Srinivasan et al. (2012)	The study develops a conceptual framework linking the marketing actions and the firm value based on the insights from the literature on branding and shareholder value.	marketing actions	Firm value (stock returns, systematic risk, idiosyncratic risk, debt-holder risk, upside/downside risk)	N/A	N/A	conceptual
The impact of brand equity on customer acquisition, retention, and profit margin	Stahl et al. (2011)	The aim of this paper is to quantify the strategic relationship between brand management (brand equity) and customer management (the components of CLV), and to demonstrate the role that marketing activities play in this relationship.	marketing actions	customer lifetime value (CLV) (customer acquisition, customer retention, profit margin)	regression models	automotive industry	empirical
Measuring marketing productivity: current knowledge and future directions	Rust et al. (2004)	This article develops a conceptual framework assessing the marketing productivity by linking the marketing strategies to shareholder value.	marketing strategies	value of the firm (market capitalization, Tobin's q)	N/A	N/A	conceptual
Marketing performance measurement ability and firm performance	O'Sullivan and Abela (2007)	The paper examines the effect of ability to measure marketing performance on firm performance and on the marketing's stature within the firm.	marketing performance measurement ability	firm performance (sales growth, market share, profitability, ROA (return on assets), size adjusted stock returns) and marketing's stature within the firm (chief executive officer (CEO) satisfaction with marketing)	hierarchical moderated regression models	high-tech	empirical
Measuring marketing performance: a review and a framework	Gao (2010)	The aim of this paper is to develop a marketing performance measurement model in the light of the the current status of marketing performance studies.	nonfinancial measures (market share, customer satisfaction, customer loyalty/retention, brand equity, innovation)	financial performance	N/A	N/A	conceptual
Market-based assets and shareholder value	Srivastava et al. (1998)	This paper develops a conceptual framework of the marketing-finance interface. The framework proposes that marketing is concerned with developing market-based assets, and the market-based assets, in turn, increase shareholder value by accelerating and enhancing cash flows, lowering the volatility and vulnerability of cash flows, and increasing the residual value of cash flows.	market-based assets	shareholder value	N/A	N/A	conceptual

Table 5.1 (continued) : Selected studies of linking marketing and business performance.

Paper	Author, Year	Aim, Description	Independent Variable	Dependent Variable	Methodology	Industry	Type
An expanded model of marketing performance	Pimenta da Gama (2011)	The purpose of this paper is to develop a model identifying the relationship between marketing culture, marketing capabilities and the financial performance.	marketing culture and marketing capabilities	financial performance (sales revenue, profit, margins, cash flow)	N/A	N/A	conceptual
New Products, Sales Promotions and Firm Value, With Application to the Automobile Industry	Pauwels et al. (2003)	The study investigates the short-term and long-term impact of such marketing actions on financial metrics, including top-line (firm revenue), bottom-line (firm income) and stock market performance (market capitalization to book value ratio).	new product introductions and promotional incentives	top-line performance (firm revenue), bottom-line performance (firm income), firm value (market capitalization to book value ratio)	vector autoregressive model (VAR)	automobile industry	empirical
Advertising spending and market capitalization	Joshi and Hanssens (2004)	The study investigates the long-run relationship between advertising spending and market capitalization.	advertising expenditures, R&D expenditures	firm value / market valuation (Tobin's q)	vector autoregressive model (VAR)	computer manufacturers	empirical
The impact of brand equity and innovation on the long-term effectiveness of promotions	Slotegraaf and Pauwels (2008)	The study employs a two stage approach in which long-term promotional effectiveness is first estimated with persistence modeling. Then, these effectiveness estimates are related to brand equity and new product introductions.	promotional activities (display activity, feature activity, price promotion)	sales (sales unit)	vector autoregressive model (VAR)	FMCG	empirical
Product innovations, advertising, and stock returns	Srinivasan et al. (2008)	The paper examines how product innovations and marketing investments for these product innovations impact stock returns by improving the outlook on future cash flows. This investigation is made both from conceptual and empirical perspectives.	product innovations, marketing investments	Stock returns $((\text{Pricet} + \text{Dividend} - \text{Pricet} - 1) / (\text{Pricet} - 1))$	stock-return response modeling	automobile industry	empirical
The impact of marketing on customer equity: from relationship marketing to product marketing	Yoo and Hanssens (2004)	This paper shows how product marketers can shape the impact of their marketing mix efforts on the customer equity through retention rate and acquisition rate.	marketing mix efforts (discount, advertising)	customer equity (retention rate, acquisition rate)	vector autoregressive model (VAR)	automobile industry	empirical
Brands and branding: research findings and future priorities	Keller and Lehmann (2006)	The paper summarizes some of the influential studies in the branding area, highlighting the topics such as brand positioning, brand integration, brand equity measurement, brand growth, and brand management.	company actions (strategy, programs)	financial market impact	N/A	N/A	conceptual
Marketing accountability: linking marketing actions to financial results	Stewart (2008)	The paper proposes a process for developing causal links among marketing activities, intermediate marketing outcomes, and financial performance metrics.	marketing actions	financial results	N/A	N/A	conceptual

Table 5.1 (continued) : Selected studies of linking marketing and business performance.¹

Paper	Author, Year	Aim, Description	Independent Variable	Dependent Variable	Methodology	Industry	Type
Customer mindset metrics and firm performance	Srinivasan (2015)	The conceptual framework highlights that the impact of marketing actions on firm performance can occur through changes in customer mindset metrics and customer equity as well as directly without such changes.	marketing (advertising, price, product, promotions, distribution)	Firm performance (profits, firm value)	N/A	N/A	conceptual

¹ Prepared by the researcher

As can be seen in Table 5.1, the conceptual studies are dominating this field. However, since the mid of 2000s, there is an increase in the empirical studies. As the table indicates, assessing marketing performance and examining the relationship between marketing and business performance gain importance in the marketing literature. Especially, chain-like approaches are developed to link marketing and business performance as a common approach to assess the marketing performance.

Examining the studies, it's noticed that there is a limited number of studies in the service field. Rather, the studies applied in fast moving consumer goods (FMCG) sector, automotive, and other tangible goods-related fields are dominating the content of the marketing performance assessment topic. However, the service marketing has gained attention since 2000s with the move of the marketing's focus from the exchange of tangible goods toward the exchange of intangibles, skills and knowledge, and processes which combines goods and services. Vargo and Lusch (2004) emphasize that service is the "fundamental basis of exchange" and is crucial for the activities between markets and the society (Gamble et al., 2011). Hence, this shift requires new approaches for the assessment of the marketing performance to define different dynamics of services.

Additionally, there are several differences between the goods-dominant and service-dominant perspectives of the marketing performance assessment. One of the most significant factors creating a difference between the service-dominant and the goods-dominant perspective is the metrics used in the marketing performance assessment approaches. When the empirical studies in this field are examined in terms of the metrics used, it can be realized that the measures related to sales are generally preferred due to being the most important indicator in the goods-dominant perspective and the ease of accessibility of the related data. However, from the service point of view, the non-financial measures are holding big importance providing insight on the further improvement of the service. Therefore, the empirical studies in the service field would provide a different perspective in terms of employing different type of metrics.

In addition, the assessment of marketing performance requires a comprehensive perspective. Given that different metrics have different strengths and weaknesses, it can be claimed that there are no silver metrics for marketing performance assessment (Ambler and Roberts, 2008). However, the majority of the studies are lacking in terms of the examination of multi-dimensional metrics. However, rather than focusing on a

single metric of marketing performance (Walker and Ruekert, 1987), marketing assessment systems need to include a set of different metrics (Rust et al., 2004a; Morgan et al., 2002, Katsikeas et al., 2016) in order to highlight all the impacts from the customer and financial perspectives. Therefore, the studies adopting a multi-dimensional approach provide more comprehensive results.

In addition, the marketing performance assessment is one of the most important tools contributing to the development of the future marketing strategies. However, in order to be able to have a generalization on these studies, the studies should have a wide coverage in terms of the time period. At this point, the studies having long-run approach become more important. Even there are already some studies having a long-run approach in the goods-dominant sector, there are still not many. The long-run studies are still lacking in the service industry. Therefore, the long-run studies in the service field would contribute to the improvement of the marketing performance literature.

Having reviewed the insights regarding the marketing performance assessment, related factors of the assessment process and the link between marketing and business performance in the marketing literature, following chapters will provide the details of an empirical study of linking marketing and business performance in banking industry.

6. METHODOLOGY

6.1 Aim of the Study

The firms need to understand the interrelationships between marketing resources and business performance in order to gain a sustained competitive advantage in a highly turbulent market environment. This relationship between marketing resources and business performance can be examined by a chain-like model. According to this model, the chain begins with the impact of the marketing resources on the marketing programs and the related marketing activities. These resources can be characterized in different terms such as financial, human, knowledge, physical, legal, organizational, reputational, informational, and relational (Morgan, 2012). The extent and the quality of the resources which are allocated to the marketing activities determine the success level of the marketing programs and the related marketing activities. Consequently, these marketing programs and the related marketing activities influence the customer mind that is exposed to such marketing impacts. At this point, understanding the influence of marketing actions on customer mind is very crucial. The companies which can define the relationship between marketing activities and the relative impact of these activities on the customers, can take the advantage of implementing the appropriate marketing programs, and therefore can be able to create a positive impact on the customers. Hence, the customers who have been affected by the marketing programs, shape their behaviors and attitudes in the market accordingly. The behaviors and the attitudes then affect the market performance and ultimately financial performance of the company. Therefore, creating a positive impact on the customers holds a big importance. As Kotler (2003a) claimed that “companies that make steady gains in mind share and heart share will inevitably make gains in market share and profitability”.

There are many studies which have concentrated on examining the direct relationship between marketing actions and company's market performance and financial performance in terms of tangible indicators such as sales quantity, market share, revenue, firm value (e.g. Pauwels et al., 2004; Pauwels et al., 2003; Srinivasan et al.,

2008b; Pauwels et al., 2002; Lehmann, 2004; Srinivasan and Hanssens, 2009). However, there are few studies (e.g. Srinivasan et al., 2010; Hanssens et al., 2014; Pauwels et al., 2013; Stahl et al., 2012) which integrate the customer-based metrics such as awareness, liking, consideration, brand equity in the relationship between marketing programs and company's business performance. Therefore, some researchers raised their calls to include the metrics related to the customer perceptions, customer attitudes, and customer intentions in the studies which examine the marketing impact and business performance (e.g. Gupta and Zeithaml, 2006). In addition, the Marketing Science Institute also encourages the studies examining the impact of the behavioral and attitudinal measures on the brand performance. Moreover, the Marketing Science Institute puts this topic among its research priorities for 2006-2008 (Srinivasan et al., 2010). Therefore, this topic becomes one of the attractive areas to study for the researchers who want to investigate and quantify the relationship between marketing and business performance.

In the light of these motives, the aim of the study is to analyze the impact of marketing resources and marketing activities on business performance indicators through customer-based brand equity. Hence; the main approach of the study is based on the chain of marketing productivity. From this perspective, this model depicting the proposed relations in the study can be a useful tool for marketing strategy development. When referring to marketing strategy, long-term approach always provides more valuable insight as stated by Dekimpe et al. (2006) that long-run market response stands in the central point of any marketing strategy. Therefore, this study adopts a long-run perspective which is very important for the companies putting effort on establishing a sustained competitive advantage.

The insight generated from the chain-like model can be used in future marketing investment decisions resulting in the combination of the most appropriate and dedicated marketing activities which would be in line with the company objectives. It also contributes for an improved level of marketing budget management guiding on the right level of resource allocation for the marketing activities. Therefore, this model literally increases level of the marketing strategy success.

6.2 Research Design and Context of the Study

This study focuses on the banking sector in Turkey due to several reasons. First, when the studies in services industry are examined, it is recognized that the differences about marketing performance assessment in services industry is not examined in detail. Second, banking is a competitive sector. Thus, the banks are very active in their marketing activities in order to obtain a competitive position in this sector. As a result, they make high investments in their marketing programs based on their marketing strategies requiring big marketing budgets. Therefore, it would be very useful for the banking sector to have a tool guiding on the development of effective marketing strategies and on the efficient usage of the marketing budgets allocated for the proper marketing activities. Third, there are several studies examining the marketing productivity chain in the marketing literature (Rust et al., 2004a). However, there is no study examining banking industry through the whole chain starting from resources until the business performance. Therefore, this study will be a contribution introducing a different perspective in the services marketing area for the researchers as well as for the practitioners.

The research design of this study consists of two stages: the preliminary stage and the main study. The preliminary stage is a form of an exploratory research and aims to discover the opinion of the senior managers of the banks representative of the population about availability and perceived importance of marketing related resources and capabilities. Therefore, this stage includes the in-depth interviews with senior managers of the banks to get their opinions and preferences regarding the availability of the data which is needed to apply to the empirical part of the study. After the preliminary stage, the main study is initiated which is a longitudinal descriptive study. The main study is applied with a four-year (2012-2015), quarterly data related to banking sector including fourteen banks. The utilized data is collected from three sources in this stage, namely, GfK, Nielsen, and the Banks Association of Turkey. The data collected for the main study will be explained in detail below.

6.2.1 Preliminary stage

The preliminary stage aims to develop a model in the light of the literature review. It also aims to apply the initial in-depth interviews conducted with the senior managers of the banks identifying potential marketing related resource and capability indicators.

The interviews are conducted with five senior managers of the banks from Turkish banking sector. Before doing the interviews with the senior managers of the banks, the researcher has consolidated the potential marketing related resource and capability indicators which would make sense in the banking sector according to the literature review. Hence, a list consisting of these marketing related resource and capability indicators are prepared to be discussed and confirmed in the interviews by the senior managers of the banks.

The interviews aim to explore the answers of three main questions regarding the indicators of the marketing related resources and capabilities. The first question is “do the indicators of the marketing related resources and capabilities which are on the list derived from the literature make sense from the bank’s point of view?” The second question is “what kind of additional indicators of the marketing related resources and capabilities are vital for productivity of marketing activities of bank services in the banking sector?” and “is it possible to obtain data related to these marketing related resources and capabilities from different banks in the sector?” The third and the most important question is “is the bank able to share the requested data for the empirical part of the study?”

The first question asked to the senior managers of the banks is based on the list summarizing potential marketing related resources and capabilities. The list is consolidated by the researcher regarding the potential marketing related resources and capabilities for the banking sector. It is including the indicators related to new product (service) launch and product (service) development capabilities, market research capabilities, customer relationship management (CRM) capabilities, R&D capabilities, human resources, and financial resources of marketing related activities. Marketing literature includes many studies where researchers have used these marketing resources and capabilities in their conceptual and empirical studies. Table 6.1 provides some of these studies.

Table 6.1 : Selected studies of resources and capabilities.

Financial Resources related to Marketing Activities (Marketing & Advertising Expenditure)	Morgan, 2012; Kotabe et al., 2002; Dutta et al., 1999; Nath et al., 2010; Niromand et al., 2012; Yu et al., 2014; Hooley et al., 1998; Erickson and Jacobson, 1992; Mizik and Jacobson, 2003; Mizik and Jacobson, 2007; Srinivasan et al., 2005; Joshi and Hanssens, 2009; Joshi and Hanssens, 2004; Fischer et al., 2009; Joshi and Hanssens, 2007; Luo and Jong, 2012; Pucci et al., 2015; Sun, 2010; Ha, 2012; Morgan and Rego, 2006; Joshi 2005
Human Resources	Morgan, 2012; Hooley et al., 2003; Hooley et al., 1998; Day, 1994; Dickinson, 2008; Wright et al., 1994; Collins and Clark, 2003; Huselid et al., 1997; 174 Huselid, 1995; Hitt et al., 2000; Cadogan et al., 2011
CRM Capabilities	Padmavathy et al., 2012; Hooley et al., 1998; Krasnikov, 2007; Ramaswami and Srivastava, 2009; Vorhies et al., 2011; Orr et al., 2010; Reinartz, 2004; Dickinson, 2008; Cadogan et al., 2011
R&D Capabilities	Dutta et al., 1999; Kotabe et al., 2002; Krasnikov, 2007; Ramaswami and Srivastava, 2009; Erickson and Jacobson, 1992; Mizik and Jacobson, 2003; Mizik and Jacobson, 2007; Dutta et al., 1999; Kemper et al., 2013; Joshi and Hanssens, 2004; Joshi and Hanssens, 2009; Joshi and Hanssens, 2007; Pucci et al., 2015; Sun, 2010; Ha, 2012; Morgan and Rego, 2006; Joshi 2005, Hooley et al., 1998
New Product (Service) Launch & Product (Service) Development Capabilities	Tsai and Shih, 2004; Vorhies et al., 1999; Hooley et al., 2003; Sood and Tellis, 2009; Weerawardena, 2001; Conant et al., 1990; Hooley et al., 1998; Santos-Vijande et al., 2012; Vorhies, 1998; Vorhies and Harker, 2000; Vorhies and Morgan, 2005; Morgan et al., 2009; Day, 1994; Cadogan et al., 2011; Zou et al., 2003; O'Cass and Weerawardena, 2010; Qureshi and Mian, 2010; Dickinson, 2008; Pauwels et al., 2004; Srinivasan et al., 2005; Slotegraaf and Pauwels, 2008, Matear et al. (2004)
Market Research Capabilities	Tsai and Shih, 2004; Vorhies et al., 1999; Conant et al., 1990; Vorhies, 1998; Vorhies and Harker, 2000; Vorhies and Morgan, 2005; Morgan et al., 2009; Day, 1994; O'Cass and Weerawardena, 2010; Qureshi and Mian, 2010, Hooley et al., 1998

In order to obtain the data from the banks regarding the marketing related indicators of resource and capabilities on the pre-prepared list, a number of questions need to be answered by the senior managers of the banks. Therefore, the questions are directed to the senior managers in order to determine whether the questions could be answered from bank point of view and whether the data related to these questions could be shared with the researcher, which enable the measurement of the marketing related resources and capabilities. Hence, the first group of indicators is related to the new product (service) launch and product (service) development capabilities. The indicators related to the new product (service) launch and product (service) development capabilities are intended to be measured with three questions. The first question is “please indicate the number of the new products (services) of your bank which are new to the market of

your sector for the four-year period between 2012-2015 in quarterly basis.”. The second question is “please indicate the number of the new products (services) of your bank which are new to your bank for the four-year period between 2012-2015 in quarterly basis.”. The third question is “please indicate the number of the new products (services) of your bank which are developed based on the modifications of the existing products (services) for the four-year period between 2012-2015 in quarterly basis.”

The second group of indicators is related to the market research capabilities. The indicators related to the market research capabilities are intended to be measured with three questions covering two different types of marketing researches. The first question is “please indicate the number of in-house marketing researches for the four-year period between 2012-2015 in quarterly basis, separately for problem identification researches and for problem solving researches.” The second question is “please indicate the number of bought marketing researches for the four-year period between 2012-2015 in quarterly basis, separately for problem identification researches and for problem solving researches.” The third question is “please indicate the marketing research expenditures as a percentage of total assets for the four-year period between 2012-2015 in quarterly basis, separately for problem identification researches and for problem solving researches.”

The third group of indicators is related to the CRM capabilities. The indicators related to the CRM capabilities are intended to be measured with three questions. The first question is “please indicate the total CRM expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The second question is “please indicate the ratio of the total CRM expenditures relative to the total bank expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The third question is “please indicate the ratio of the total CRM expenditures relative to the total bank assets of your bank for the four-year period between 2012-2015 in quarterly basis.”

The fourth group of indicators is related to the R&D capabilities. The indicators related to the R&D capabilities which are related to marketing are intended to be measured with three questions. The first question is “please indicate the total R&D expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The second question is “please indicate the ratio of the total R&D expenditures relative to the total bank expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The third question is “please indicate the ratio of the total R&D expenditures relative to the total bank assets of your bank for the four-year period between 2012-2015 in quarterly

basis.” The fifth group of indicators is related to the human resources. The indicators related to the human resources of the marketing and the support staff are intended to be measured with three questions. The first question is “please indicate the total human resource expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The second question is “please indicate the ratio of the total human resource expenditures relative to the total bank expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The third question is “please indicate the ratio of the total human resource expenditures relative to the total bank assets of your bank for the four-year period between 2012-2015 in quarterly basis.” Finally, the sixth group of indicators is related to the financial resources of marketing related activities. The indicators related to the financial resources of marketing related activities are intended to be measured with three questions. The first question is “please indicate the total marketing expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The second question is “please indicate the ratio of the total marketing expenditures relative to the total bank expenditures of your bank for the four-year period between 2012-2015 in quarterly basis.” The third question is “please indicate the ratio of the total marketing expenditures relative to the total bank assets of your bank for the four-year period between 2012-2015 in quarterly basis.”

The answers of the senior managers to the three main questions and to the sub-questions standing on the pre-prepared list of the researcher show that all the resources and capabilities which stand on the list are effective on the marketing activities. However, the data related to some of these capabilities is not available in the bank reports. The only available data is related to the financial resources of the marketing related activities and related to the human resources of the marketing and the support staff. Therefore, this study includes these two marketing related resources in the model. There are three main reasons for the unavailability of the rest of the requested data of the banks. The first reason is that the requested data is not consolidated and reported by all the banks. The second reason is that all the banks might consolidate and report the requested data; however, there is not a standardized approach in the banks when reporting and consolidating the data. Hence, there is not a common database for the requested data due to the difference between the methods of the banks which they use for consolidation and reporting. The difference between the banks in terms of the way of consolidation and reporting the data is mainly caused due to the different

organizational structures in the bank organizations. The organizational structures of the banks can differ based on some aspects such as the size, the target group. When the structure of the organizational divisions is different, then the data related to this division would have different contents, which prevents the apples to apples comparison between banks. For example, the structural definition of the CRM division might differ from bank to bank. Thus, this make a difference in the content of the data related to this division. In addition, the calculation methods of the cost of the CRM campaigns, call centers, e-mails, SMSs etc. might differ from bank to bank. As a result, the consolidated and reported data would not be a comparable data for all the banks. Another reason is that some of the data is confidential for the banks. Therefore, they are not willing to share the data. For example, the banks preferably don't want to share R&D data due to confidentiality concerns. Hence, even this data exists, it is not shared with the third parties. All these limitations show that obtaining all the requested data is not as easy as the information obtained from the customers, as obtaining the data from all the banks is dependent on many conditions such that the banks would have the data, they would consolidate it in a common way, and they would share the data. Therefore, this study concentrates for the marketing related resources on the most suitable data from the data obtaining point of view. As a result, the data related to the financial resources of the marketing activities and the data related to the human resources of marketing and the support staff is used in this study.

After the finalization of the interviews with the senior managers of the banks and determination of the marketing resources which are going to be used in the model, the model is created based on the conceptual studies (e.g. Srinivasan, 2015; Lehmann, 2004; Lehmann and Reibstein, 2006; Rust et al., 2004a; Gupta and Zeithaml, 2005; Morgan, 2012; Katsikeas et al., 2016) and empirical studies (e.g. Stahl et al., 2012; Srinivasan et al., 2010; Hanssens et al., 2014) related to marketing assessment in the marketing literature. Figure 6.1 shows the proposed model. The model highlights that the marketing activities and the marketing resources influence the business performance through the changes in customer-based brand equity.

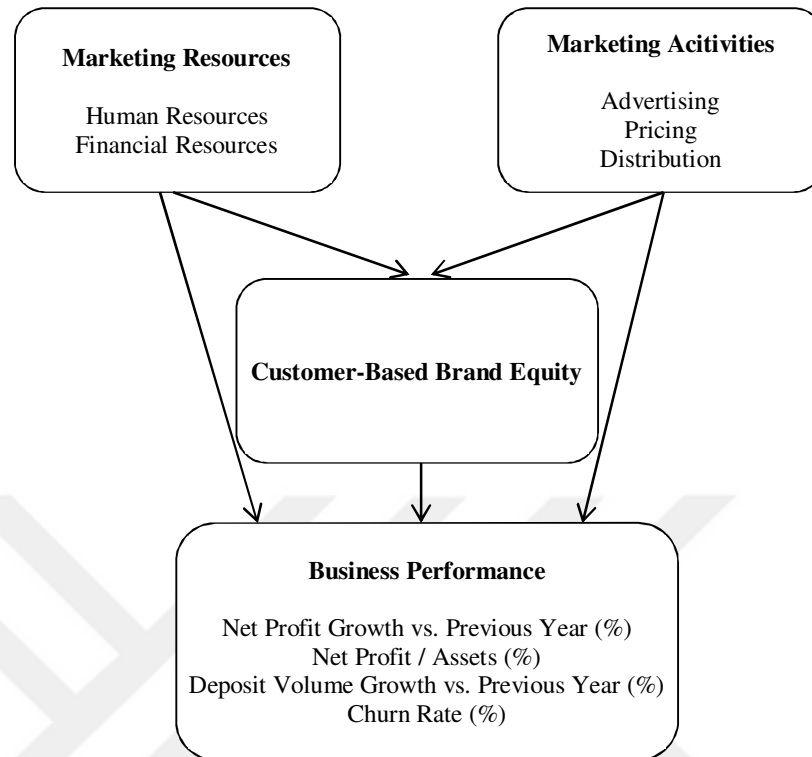


Figure 6.1 : Proposed model.

Following the preliminary stage, the main study is started which will be discussed in detail below.

6.2.2 Main study

In the light of the general aim, the specific aims of the study are to identify the relationships between the variables and indicate their impacts. Hence, the research questions of the study are as follows.

RQ1: Is there any short-term (long-term) effect of human resources intensity (measured by the growth of human resources expenditures, the ratio of human resources expenditures to the total bank expenditures, and the ratio of human resources expenditures to the assets) on the customer-based brand equity?

RQ2: Is there any short-term (long-term) effect of human resources intensity (measured by the growth of human resources expenditures, the ratio of human resources expenditures to the total bank expenditures, and the ratio of human resources expenditures to the assets) on the business performance (measured by net profit growth, the ratio of the net profit to the assets, the growth of the deposit volume, and the churn rate)?

RQ3: Is there any short-term (long-term) effect of financial resources intensity (measured by the growth of marketing expenditures, the ratio of marketing expenditures to the total bank expenditures, and the ratio of marketing expenditures to the assets) on the customer-based brand equity?

RQ4: Is there any short-term (long-term) effect of financial resources intensity (measured by the growth of marketing expenditures, the ratio of marketing expenditures to the total bank expenditures, and the ratio of marketing expenditures to the assets) on the business performance (measured by net profit growth, the ratio of the net profit to the assets, the growth of the deposit volume, and the churn rate)?

RQ5: Is there any short-term (long-term) effect of marketing activities (measured by the advertising intensity, the pricing mark-up, and the distribution intensity) on the customer-based brand equity?

RQ6: Is there any short-term (long-term) effect of marketing activities (measured by the advertising intensity, the pricing mark-up, and the distribution intensity) on the business performance (measured by net profit growth, the ratio of the net profit to the assets, the growth of the deposit volume, and the churn rate)?

RQ7: Is there any short-term (long-term) effect of the customer-based brand equity on the business performance (measured by net profit growth, the ratio of the net profit to the assets, the growth of the deposit volume, and the churn rate)?

6.3 Variables, Measurements and Data Collection

6.3.1 Marketing related resources

As explained in the preliminary stage of the study, the marketing resources which are going to be used in this study are determined based on the interviews with the senior managers of the banks. Thus, based on the availability of the banking data, the financial resources related to the marketing activities and the human resources of the marketing and the support staff will be included in the empirical part of the study. “Financial resources concern the cash available for investment in the firm’s marketing-related activities” (Morgan, 2012, p. 105). Therefore, for financial resources of marketing related activities, the marketing expenditures of the banks are used. In addition,

“human resources include the breadth and depth of marketing personnel available (Möller and Anttila, 1987) but may also include non-marketing personnel that provide inputs needed to define, develop, and deliver value to customers (Aufreiter et al., 1996)” (Morgan, 2012, p. 105). Therefore, for the human resources, the human resources expenditures of the marketing and the support staff are taken into consideration. The required data related to the human resources and the financial resources of marketing activities are obtained from the public tables of the Banks Association of Turkey. The tables report the related variables separately for each quarter. Hence, the data is consolidated and processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

However, the fourteen banks which are included in this study differ from each other in terms of their size which makes it difficult to make a healthy comparison in terms of the absolute values of human resources expenditures and financial resource expenditures of marketing activities. Because of this reason, the study used three types of operationalization for the financial resources of the marketing activities and human resources of the marketing and support staff. In the first form of the operationalization of the financial resources related to the marketing activities and the human resources related to the marketing and support staff, the growth rates of these expenditures versus the year before are used. Namely; for human resources of the marketing and support staff, the growth rate of the human resources expenditures versus the year before is used. For the financial resources expenditures of the marketing activities, the growth rate of the financial expenditures related to the marketing activities versus the year before is used. In the second form of the operationalization, a ratio number is preferred for both of the human resources of the marketing and support staff and financial resources of marketing activities. Namely; for human resources of the marketing and support staff variable, the ratio of the human resource expenditures of the marketing and support staff to the total bank expenditures is used. For the financial resources of the marketing activities variable, the ratio of the financial expenditures of the marketing activities to the total bank expenditures is used. In the third form of the operationalization, again a ratio number is preferred for both of the human resources of the marketing and support staff and financial resources of marketing activities. Namely; for human resources of the marketing and support staff variable, the ratio of the human resource expenditures of the marketing and support staff to the total bank

assets is used. For the financial resources of the marketing activities variable, the ratio of the financial expenditures of the marketing activities to the total bank assets is used.

6.3.2 Marketing activities

For marketing activities, the data related to the advertising, pricing, and to the distribution is used. The first marketing activity included in this model is advertising intensity. The conceptual definition of the advertising variable used in this model refers to the extent of how much the customer is exposed to the advertising activities of the related banks. To operationalize this conceptual definition, the data needed to be collected from all the banks which would be quite hard. More important, this data would be open to non-comparability concerns due to different calculation methods from one bank to other. Therefore, a research company is utilized which consolidates all the advertising data for all the media in a standard method. Hence, Nielsen provided the advertising data of all the related banks which they have integrated by a calculation technique. According to this technique, Nielsen stores the quantitative aspects of all the advertising activities of the banks in its database for each bank. Then, Nielsen converts them to an advertising expenditure by using unit prices of each marketing advertising activity for each media. The unit prices used for this calculation are gathered from rate cards of the media spaces. The media covered with this calculation method is the national television (TV), radio, print media, internet, cinema, outdoor, and the local TV. As a result of this calculation, the data for each media is obtained for each of the fourteen banks in quarterly basis for four-year period between 2012-2015. This data is then processed and consolidated by the researcher in order to integrate it to the study.

The second marketing activity included in this model is pricing mark-up. The measurement of the pricing for each of the service delivery activity of the related banks would be quite complicated due to non-standardized approaches in the service delivery activities in different banks. In addition, this approach might cause non-comparable results between the banks due to differences in calculation methods. However, interest rate data is consolidated and reported in the same way for all the banks. Therefore, this study includes two different interest rate data as a pricing mark-up variable. The first one is the interest rate that the related banks apply to the customer loans. The second one is the interest rate that the related banks apply to the deposits. This data is obtained from the public tables of the Banks Association of Turkey. The operationalization for

the pricing mark-up is done in terms of the difference between two interest rates; respectively, the interest rate, that the related banks apply to the customer loans, and the interest rate, that the related banks apply to the deposits. The tables report the related variables separately for each quarter. Hence, the data is then consolidated and processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

The last dimension of the marketing activities is the distribution intensity. Distribution intensity is operationalized by three different measures of the related banks; namely, the number of the branches, the number of ATMs, and the number of personnel. The banks in different sizes have different number of branches, ATMs, and personnel by nature. When the difference between these numbers is too high, the comparison between the banks gets harder. Therefore, in order to prevent the comparability concerns due to different sizes of the banks, the logarithmic values of the data related to the branch number, ATM number, and personnel number is utilized in this study. The number of branches and the number of personnel is obtained from the public reports of the Banks Association of Turkey. The tables report the related variables separately for each quarter. Hence, this data is then consolidated and processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study. The number of the ATMS, on the other hand, are obtained from the activity reports of the banks which are obtained from the websites of each bank for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

6.3.3 Customer-based brand equity

Customer-based brand equity is, as it's explained before, "the differential effect that brand knowledge has on consumer or customer response to the marketing of that brand" (Keller, 1993, p. 2). In this study, customer-based brand equity is measured by a simple version of Aaker's (1991) brand equity scale. For this reason, data from an omnibus panel which is conducted throughout the four years between 2012-2015 in quarterly periods, covering 2471 customers is used. This measure includes three dimensions; namely, brand awareness, brand loyalty, and brand associations. The data collection is conducted by GfK for the four-year period of time through an omnibus panel.

Among the dimensions of customer-based brand equity, brand awareness is identified with three questions referring to aided and unaided recall in this study. First question is, “when you think about the banks operating in Turkey, would you please tell the names of the banks which are familiar to you, even if you just know the name of the bank?” With this unaided question, the top of mind (TOM) bank is identified with the bank name which is called in the first place. Second question is, “more? even more?”. This unaided question requires multiple answers where the other known banks are searched. The third question is, “now I will give you a card including the names of some banks. Even if you have not visited the banks so far, would you please tell us the names of the banks which you already know from this list?”. This question is an aided question and it searches for multiple answers. Thus, these three questions constitute the brand awareness variable in this study.

The other customer-based brand equity dimension, brand loyalty is identified with the combination of satisfaction and endorsement questions in this study. The raised question for satisfaction is, “would you please tell the level of your satisfaction level with the banks you are working by using the cards? 1 means “very dissatisfied” and 5 means “very satisfied””. The second question is regarding endorsement. Endorsement is measured with the question: “would you please tell the names of the bank or the banks which are matching with the statement of “I would endorse this bank to my family and friends”. Thus, these two measures constitute the dimension of brand loyalty of customer-based brand equity in this study.

Finally, the last dimension of customer-based brand equity is measured with the statements referring to brand associations. Four statements are used to measure brand associations variable. The question is as follows: “would you please tell the name or names of these banks which are matching with these statements?”. The statements which are asked with this question are: “the staff of this bank is friendly”, “the customers of this bank get good advices”, “the bank is trustable”, “this bank offers advantageous interest rates and has low service fees”. Thus, these four statements constitute the brand associations variable in this study.

Finally, all the data referring to the customer-based brand equity is consolidated and processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

6.3.4 Business performance

As explained before, the business performance of a company has two main aspects: one is the market performance which shows the target customer's responses to the company, and the other one is the financial performance which can be defined as the cost of the achieved position of the company measured by the financial indicators (Day, 1994; Day and Wensley, 1988). Therefore, this study measures the business performance of the banks by two main variables, namely financial performance and market-based performance. As mentioned above, the banks are differing in terms of their volumes because of the different sizes. As a result of this, it becomes hard to make a proper comparison between them in terms of any absolute volume. Therefore, in order to have comparable performance measures between the banks, the performance variables in this study are determined as they would show the progress in terms of the bank's own financial indicators. Hence, a bank's improvement level versus the year before and the profit share relative to its own assets might be an indicator which can be then compared for all the banks in different sizes. Hence, this study measures financial performance by three measures. These measures are "net profit growth vs. previous year", "deposit volume growth vs. previous year", and "net profit / assets". The required data related to the financial performance are obtained from the public tables of the Banks Association of Turkey. The tables report the related variables separately for each quarter. Hence, the data is consolidated and processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

The other variable of the business performance used in this study is market-based performance. As market-based performance is an indicator displaying the customer responses, market-based performance is measured by the churn rate in this study. The measurement of the churn rate is performed with the question of "is there a bank or banks which you decide not to work anymore, you terminate your relationship or you decrease the frequency of your contact with in the last year or this year? If yes, would you please tell the name or names of these banks?" Hence, an omnibus panel is conducted by GfK throughout the four years between 2012-2015, covering 2471 customers. Finally, all the data of financial performance variables and market-based performance variables which refer to business performance is consolidated and

processed by the researcher for all the quarters for the four-year period between 2012-2015 in order to integrate to the study.

The data used for all the variables, their measures, and their sources are summarized in Table 6.2, Table 6.3, Table 6.4, Table 6.5, and Table 6.6.

Table 6.2 : Measures of marketing resources.

Marketing Resources	Related Variable	Measures
Human Resources	Human Resources Intensity	* Growth of Human Resources Expenditures vs. Previous Year (%)
		* Human Resources Expenditures (TL) / Total Bank Expenditures (TL)
		* Human Resources Expenditures (TL) / Assets (TL)
Financial Resources	Financial Resources Intensity	* Growth of Marketing Expenditures vs. Previous Year (%)
		* Marketing Expenditures (TL) / Total Bank Expenditures (TL)
		* Marketing Expenditures (TL)/ Assets (TL)

Table 6.3 : Measures of marketing activities.

Marketing Activities	Related Variable	Measures
Advertising	Advertising Intensity	* Marketing expenditure per media (TL) (National TV, Radio, Print Media, Internet, Cinema, Outdoor, Local TV)
Price	Pricing Mark-Up	* Interest rate applied to the loans (%) - Interest rate applied to the deposits (%)
Distribution	Distribution Intensity	* Number of branches (Logarithmic Values) * Number of personnel (Logarithmic Values) * Number of ATMs (Logarithmic Values)

Table 6.4 : Measures of customer-based brand equity.

Customer-Based Brand Equity	Related Variable	Measures
Customer-Based Brand Equity	Brand Awareness	* When you think about the banks operating in Turkey, would you please tell the names of the banks which are familiar for you,even if you just know the name of the bank? (TOM) (first indicated bank-single answer - unaided)
		* More? Even more? (other indicated banks - multiple answers - unaided)
		* Now I will give you a card including the names of some banks. Even if you have not visited the banks so far, would you please tell us the names of the banks which you already know from this list? (multiple answers - aided)
Customer-Based Brand Equity	Brand Loyalty	Satisfaction * Would you please tell the level of your satisfaction with the banks you are working with using the cards? 1 means “very dissatisfied” and 5 means “very satisfied” (Mean - T2B)
		Endorsement * I would endorse this bank to my family and friends. (e)
	Brand Associations	* The staff of this bank is friendly. (a) * The customers of this bank get good advices. (b) * The bank is trustable. (c) * This bank offers advantageous interest rates and has low service fees. (d)
		*** a, b, c, d, e: Now I will read you some statements about the banks. Would you please tell the name or names of these banks which are matching with these statements? (Multiple answers)

Table 6.5 : Measures of business performance.

Business Performance	Related Variable	Measures
Business Performance	Financial Performance	Net Profit Growth vs. Previous Year (%) Net Profit / Assets (%) Deposit Volume Growth vs. Previous Year (%)
	Market-Based Performance	Churn Rate * Is there a bank or banks which you decide not to work anymore, you terminate your relationship or you decrease the frequency of your contact with in the last year or this year? If yes, would you please tell the name or names of these banks? (Multiple answers)

Table 6.6 : Data sources.

Variables	Data Source	Data Type	Period
Marketing Resources			
Human Resources Intensity	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Financial Resources Intensity	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Marketing Activities			
Advertising Intensity	Nielsen	Panel Data	2012-2015, Quarterly
Pricing Mark-Up	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Distribution Intensity	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Customer-Based Brand Equity			
	GfK	Omnibus Panel Data	2012-2015, Quarterly
Business Performance			
Net Profit Growth vs. Previous Year (%)	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Net Profit / Assets (%)	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Deposit Volume Growth vs. Previous Year (%)	The Banks Association of Turkey	Panel Data	2012-2015, Quarterly
Churn Rate	GfK	Omnibus Panel Data	2012-2015, Quarterly

6.4 Analysis Methods for the Study

6.4.1 Role of the panel studies in marketing

Many of the studies in marketing are based on the cross-sectional data. However, there is a growing usage of long-term data in marketing. Among the long-term approaches, the usage of time-series data is more common relative to the usage of the panel data in marketing studies.

Frees (2004) clarifies the differences between cross sectional data, time series, and the panel data. Regression analysis and time series are the two important statistical methods. In regression analysis, the common approach is to analyze data from a cross-section of subjects. However, with time series, one or more subjects are identified and observed over time. In order to conduct time series methods, limited number of subjects are utilized which have many observations over time. Panel data analysis is a combination of regression and time series analysis. In this approach, panel data contains a cross-section of subjects with many regression data sets. Panel data is different than the time series as many subjects are observed in this data type. The term panel data can be interchangeably used also as longitudinal data.

There are various advantages of panel data relative to pure cross-sectional and pure time series data. Hsiao (2003) and Klevmarken (1989) summarize the benefits of the panel data. These advantages are that; the panel data, (1) can control the individual

heterogeneity, (2) give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency, (3) are better able to study the dynamics of adjustment, (4) are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series data, and (5) panel data models allow to construct and test more complicated behavioral models than purely cross-section or time-series data.

Considering the benefits of the panel data and also the lack in the marketing literature in terms of the panel data usage, this study uses a statistical approach which is based on panel data. The steps of the analysis are summarized in Figure 6.2.



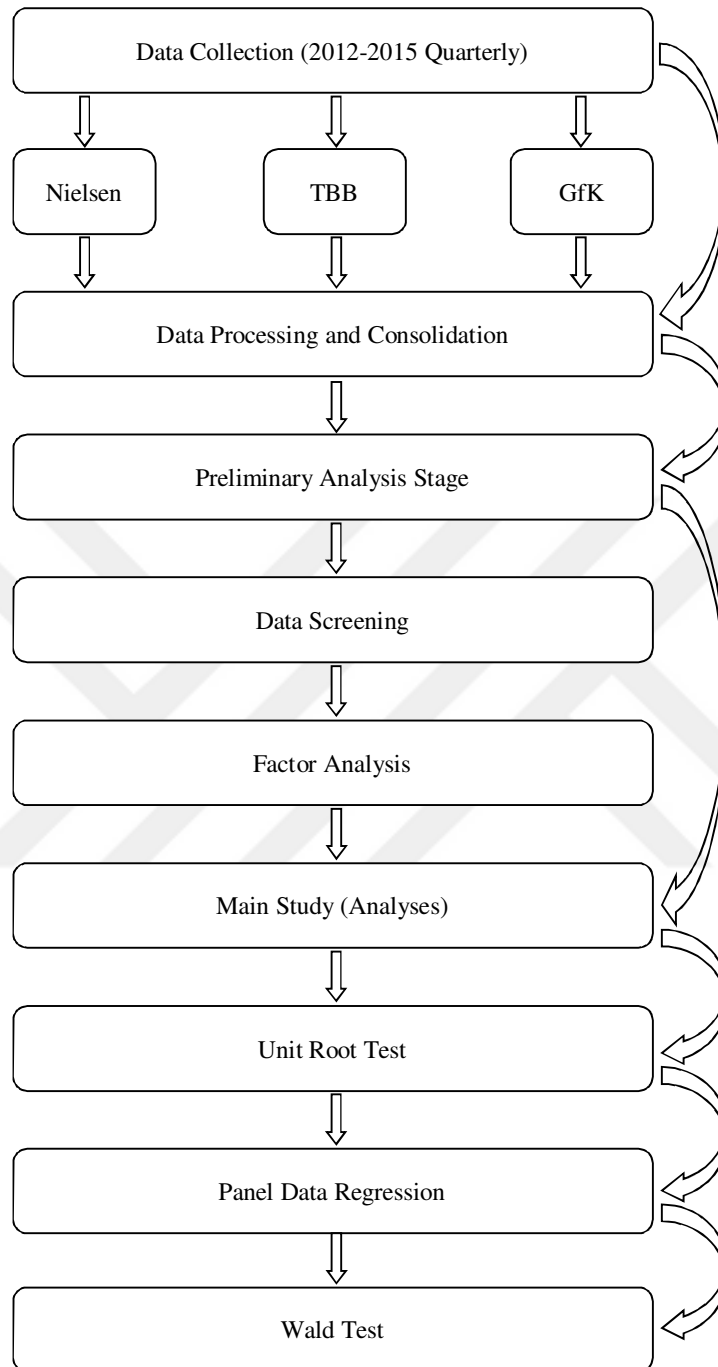


Figure 6.2 : Steps of the analysis.

As it can be seen in Figure 6.2, this study is based on several steps of the analyses which are based on panel data.

6.4.2 Drivers for growing use of time-series models in marketing

As mentioned above, panel data is a combination of cross-sectional and time-series data. Among these data types, cross-sectional data is the most commonly used data

type in marketing studies. However, time-series data is also getting to be used more frequently in marketing studies in the last years. To explain the motives behind this increase, Dekimpe and Hanssens (2010) concluded four main reasons identifying the rising usage of time-series models in marketing: 1) growing size of marketing data sets, 2) increasing level of change in the market environment, 3) the approach to examine marketing-finance relationship, and 4) the availability of internet data sources.

The first main reason for the growing use of time-series models in marketing is the growing size of marketing data sets. The marketing data sets have grown in several levels. The first level is that the temporal aggregation gets available in shorter periods such as weekly data (Srinivasan et al., 2008a), daily data (Pauwels and Weiss, 2008), and even hourly data (Tellis et al., 2000) for several years. This improvement has a positive impact on the increase of the number of the observations. The second level is that the data gets available for an expanding number of variables which enable the usability of extended systems of equations such as VAR models where the inter-relationships between these variables can be identified. In addition, this expanded level of data enables an enhanced confirmatory approach to the traditional time-series studies. The third level is the availability of the data for various countries enabling to examine the differences in terms of long-term marketing behaviors between different countries. The fourth level is that the new attitudinal metrics become available to be used in marketing response models (e.g. Srinivasan et al., 2010). The fifth level is that data becomes available for longer periods. Hence, all these factors enrich the content of the data.

The second main reason for the growing use of time-series models in marketing is the increasing level of change in the market environment. The market environment changes with a high speed due to several reasons such as new products, new players, new entries and exits causing a turbulence in the competition. At this point, time series models are very useful to detect the impacts of such changes.

The third main reason for the growing use of time-series models in marketing is the approach to examine marketing-finance relationship. In fact, finance and marketing disciplines were different in terms of the usage of the time-series techniques. As finance examines the valuation of the assets over time, this discipline has been using time-series for a long time. However, marketing studies put emphasis on the customer attitudes and behaviors, and they are limited in terms of time-series techniques due to

the lack of long time-series. But, things have changed in marketing. There are some reasons for this change in the marketing approach. The first point is that the acknowledgement of the need of marketing to be accountable due to the budget issues (Ambler, 2003). The second point is that the accessibility of marketing to the longitudinal data sets enabling to use the time-series techniques. As a result, these developments enable a rise in the studies on the marketing and finance interface using time-series techniques. With the approach of examining the long-term effects of marketing actions on market response, marketers can display their role in shareholder value creation (e.g. Srinivasan and Hanssens, 2009). Hence, the value of marketing can be displayed and the marketing budgets can be justified with these new approaches of the analyses.

The fourth main reason for the growing use of time-series models in marketing is the availability of internet data sources. Internet data sources provide very useful data for time-series methods. The data gathered about consumer behavior, marketing activities, and competitive environment enable the increasing use of the time-series techniques. Internet provides a huge source of data for the researchers. From this point of view, the impact of the internet is quite valuable. As a result of all these factors impacting the increasing usage of time-series model in marketing, the implications of the analyses get more valuable. Consequently, the results provide a room for the practitioners to carry the conclusions to the real-life practices.

7. ANALYSIS AND RESULTS

7.1 Preliminary Analysis Stage

The preliminary analysis stage consists of two stages. The first stage is the process of ensuring that the data is clean to be used for further statistical analyses. This stage ensures that the data is useable, reliable, and valid for the statistical analyses. The second stage is the Factor analysis. Factor analysis is conducted to produce the customer-based brand equity variable.

7.1.1 Data screening

Before conducting the main analyses, the data need to be screened for missing values and outliers. In addition, the residuals are checked for normality, homoscedasticity, and multicollinearity, as suggested by Hair et al. (2010). This stage is necessary to ensure that the key multivariate assumptions are met by the data before conducting the main analyses.

Outlier detection

Outliers are the “observations or subsets of observations which appear to be inconsistent with the remainder of the data” (Barnett & Lewis, 1994, p. 7). The presence of outliers in the data could decrease the statistical power of nonparametric tests, leading to biased results (Verardi & Croux, 2008). The outliers might affect the relationship between the variables of the correlation matrix and distort the results of the correlations. Therefore, the dataset has been checked for the outliers before conducting the Factor analysis.

Missing data

Researchers claim that the missing values could create several problems in the analyses leading to biased estimates of parameters, loss of information, decreased statistical power, increased standard errors, weakened generalizability of findings. (Graham, 2009). For this reason, the data has been screened before starting the analyses. It is realized that the data which is obtained from the Banks Association of Turkey does

not include the data regarding the number of ATMs. Therefore, this data is obtained from the websites of each bank by examining the quarterly activity reports of the banks.

Normality test

Normality check refers checking whether the residuals of the estimated models are fitting the normal distribution or not. The reason to check the normality is because non-normally distributed residuals (highly skewed or kurtotic variables) could distort the relationships and significance of the conducted tests (Osborne and Waters, 2002). Therefore, the normality check of the residuals has been examined.

Homoscedasticity

Homoscedasticity means that the variance of residuals is the same across all levels of the independent variables. When the variance of residuals differs at different values of the independent variables, heteroscedasticity is indicated. According to Berry and Feldman (1985), slight heteroscedasticity has little effect on significance tests; however, when heteroscedasticity is marked, it can lead to serious distortion of findings and seriously weaken the analysis. Therefore, this assumption is checked.

Multicollinearity test

Multicollinearity can be detected in case there is unacceptably high correlation within the independent variables (Hair et al., 2010). Multicollinearity is an important methodological issue because it can seriously distort the estimates of regression coefficients, as well as their statistical significance (Hair et al., 1998). Therefore, this assumption has been checked.

7.1.2 Factor analysis

Factor analysis is the second stage of the preliminary analysis. This analysis is conducted to create customer-based brand equity construct. The factor analysis is conducted based on the omnibus panel data for the four-year period of 2012-2015. As mentioned in the methodology chapter, customer-based brand equity is measured by the questions referring to brand awareness, brand loyalty, and brand associations. In all the questions, except the satisfaction variable, the respondents are asked to name the banks which are related with the question. The answers of the respondents are then summed up, and the ratio for each bank is defined according to the results. This ratio is used in the Factor analysis for the corresponding statements. For the satisfaction

variable, five-point Likert scale is used when the survey is conducted. For this variable, the mean and the top two box (T2B) results are used in the Factor analysis. Hence, Factor analysis is conducted in order to obtain one variable out of the above-mentioned questions by using SPSS 20. This new variable is then used in the further analyses which are conducted in EViews 9.

Kaiser-Meyer-Olkin (KMO) and Bartlett test results show that the data is suitable for Factor analysis. The results of the Factor analysis indicate that the total variance explained is 71,09 %. The component matrix related to Factor analysis is presented in Table 7.1.

Table 7.1 : Component matrix.

	Component 1
The customers of this bank get good advices	.946
The staff of this bank is friendly	.945
This bank offers advantageous interest rates and has low service fees	.942
The bank is trustable	.940
I would endorse this bank to my family and friends	.937
Total Spontaneous Brand Awareness	.937
Top of Mind Bank	.906
Unaided recall	.880
Satisfaction (T2B)	.662
Satisfaction (Mean)	.650
General Brand Awareness	.615
Aided Brand Awareness	.615
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

7.2 Analysis Procedure²

7.2.1 Unit root testing

Unit-root tests are used to determine whether or not the different variables are stable or evolving (Dekimpe and Hanssens, 2003). Unit-root tests enable to identify the presence of a long-run or stochastic-trend component in a series data-generating process. In the absence of a unit root, all observed fluctuations in a brand's performance or marketing support are temporary deviations from a deterministic component (such as a fixed mean or deterministic trend), whereas no complete reversion occurs in unit-root processes, i.e. the series may wander widely apart from any previously-held position (Dekimpe et al., 1996).

Dekimpe et al. (1996) claim that unit-root testing deserves more attention in marketing research for statistical reasons. It has been recognized in econometrics that traditional hypothesis tests may be misleading when applied to non-stationary variables (Granger & Newbold, 1986). Within the marketing literature, however, one seldom tests for non-stationarity, even though this could result in spurious relationships between the variables of interest or result in inconsistent specifications when not all variables are integrated of the same order (Granger, 1981). Moreover, if based on a visual inspection, a prolonged up-or downward movement is found in the data, one tends to automatically include a deterministic trend (e.g. Rao & Bass, 1985). The inappropriate use of deterministic trends may again create statistical problems; however, this has been largely ignored in the marketing field (Dekimpe et al., 1996).

Baltagi (2005) claimed that panel unit root tests which assume cross-sectional independence highlighting that testing for unit roots in panels is newer when compared with the studies testing unit roots in time series. There are several studies regarding this topic (Levin et al., 2002; Im et al., 2003; Harris and Tzavalis, 1999; Maddala and

² Chapter 7.2 is adapted from Baltagi, B. H. (2005). *Econometric Analysis of Panel Data*. UK: John Wiley & Sons. For further information, please see the same source.

Wu, 1999; Choi, 2001; Hadri, 2000; Bhargava et al., 1982; Boumahdi and Thomas, 1991; Breitung and Meyer, 1994 and Quah, 1994).

Different approaches in unit test are mentioned in the section below summarized from Baltagi (2005).

Levin, Lin and Chu test

Levin et al. (2002) claimed that unit root tests have limited power against alternative hypotheses with highly persistent deviations from equilibrium. Therefore, they proposed a more powerful panel unit root test than performing individual unit root tests for each cross-section. The null hypothesis proposes that each individual time series includes a unit root against the alternative that each time series is stationary.

Levin et al. (2002) proposed that their panel root test for panels of moderate size with N which is between 10 and 250 and T between 25 and 250. However, the test proposed by Levin et al. (2002) has some limitations. The test is based on the independence assumption across cross-sections and cannot be applied if there is cross-sectional correlation. In addition, the assumption that all cross-sections have or do not have a unit root is restrictive.

Im, Pesaran and Shin test

The Levin, Lin and Chu test has a restriction in terms that it requires ρ to be homogeneous across i . Im et al. (2003) allow for a heterogeneous coefficient of y_{it} and suggest another testing method which is structured on averaging individual unit root test statistics. The null hypothesis is that each series in the panel includes a unit root, i.e., $H_0: \rho_i = 0$ for all i and the alternative hypothesis allows for some (but not all) of the individual series to have unit roots, i.e.,

$$H_1: \begin{cases} \rho_i < 0 \text{ for } i = 1, 2, \dots, N_1 \\ \rho_i = 0 \text{ for } i = N_1 + 1, \dots, N \end{cases} \quad (7.1)$$

Breitung's test

The Levin, Lin and Chu (LLC) test and Im, Pesaran and Shin (IPS) test require $N \rightarrow \infty$ such that $N/T \rightarrow 0$, i.e. N should be small enough relative to T . It denotes that both tests may not keep nominal size well when N is small or N is large relative to T . Indeed, it is displayed by the simulation results of Im et al. (2003) that both IPS and LLC have size distortions as N gets large relative to T . Breitung (2000) studies the

local power of LLC and IPS test statistics against a sequence of local alternatives. Breitung (2000) believes that the weak points of LLC and IPS are that they suffer from a dramatic loss of power if individual-specific trends are included. This is due to the bias correction that also removes the mean under the sequence of local alternatives. On the other hand, Breitung (2000) proposes a test statistic that does not make a bias adjustment which is significantly powerful than LLC and IPS tests employing Monte Carlo experiments. According to the simulation results, the power of LLC and IPS tests is quite sensitive to the specification of the deterministic terms.

Combining p -value tests

Maddala and Wu (1999) and Choi (2001) suggest a Fisher-type test

$$P = -2 \sum_{i=1}^N \ln p_i \quad (7.2)$$

which combines the p -values from unit root tests for each cross-section i to test for unit root in panel data. Maddala and Wu (1999) claimed that the IPS and Fisher tests relax the restrictive assumption of the LLC test that ρ_i is the same under the alternative. Both the IPS and Fisher tests merge information based on individual unit root tests. But, the Fisher test is more advantageous than IPS in terms that this test does not require a balanced panel. Additionally, different lag lengths can be employed by the Fisher test in the individual Augmented Dickley-Fuller (ADF) regressions and can be applied to any other unit root tests. But, the fact that the p values need to be obtained by Monte Carlo simulations is the disadvantage. Maddala and Wu (1999) believe that the Fisher test with bootstrap-based critical values operates the best and is the favorite choice for testing nonstationary as the null and also in testing cointegration in panels. Choi (2001) suggests two different test statistics besides Fisher's inverse chi-square test statistic P . Choi (2001) claims that these three combining p -value tests has similar advantages: 1) the cross-sectional dimension, N , can be either finite or infinite, 2) each group can have different types of non-stochastic or stochastic components, 3) the time series dimension, T , can be different for each i , 4) the alternative hypothesis would allow some groups to have unit roots while other may not.

Residual-based LM test

Hadri (2000) developed a residual-based Lagrange multiplier (LM) test. The null hypothesis of this test assumes that there is no unit root in any of the series in the panel

against the alternative of a unit root in the panel. This can be described as a generalization of the KPSS test from time series to panel data. The test is structured on OLS (ordinary least squares) residuals of y_{it} on a constant, or on a constant and a trend.

The test statistic is given by $Z = \sqrt{N}(LM - \xi_1)/\zeta$ and asymptotically distributed as $N(0,1)$, where $\xi = \frac{1}{6}$ and $\zeta = \frac{1}{45}$ if the model only includes a constant, and $\xi = \frac{1}{15}$ and $\zeta = \frac{11}{6300}$, otherwise.

Yin and Wu (2000) suggest stationarity tests for a heterogeneous panel data model. The researchers think the case of serially correlated errors in the level and trend stationary models. These panel tests use the Kwiatkowski et al. (1992) test and the Leybourne and McCabe (1994) test from the time series literature. Two different ways of pooling information from the independent tests are utilized. The group mean and the Fisher-type tests are employed in order to obtain the panel stationarity tests. Monte Carlo experiments are applied which show good small sample performance in terms of size and power.

There are several simulations developed to discover the finite sample performance of panel unit root tests. For instance, Choi (2001) examined the small sample properties of the IPS t-bar test and Fisher's test.

7.2.2 The one-way error component regression model

A panel data regression is unlike a regular time-series or cross-section regression since it holds a double subscript on its variables, i.e.

$$y_{it} = \alpha + X'_{it}\beta + u_{it} \quad i = 1, \dots, N; \quad t = 1, \dots, T \quad (7.3)$$

where i refers to households, individuals, firms, countries etc. and t refers to time. That means the i subscript represents the cross-section dimension and t represents the time-series dimension. α is a scalar, β is $K \times 1$ and X_{it} is the i t th observation on K explanatory variables. A one-way error component model is used in most of the panel data applications for the disturbances, with

$$u_{it} = \mu_i + v_{it} \quad (7.4)$$

where μ_i standing for the unobservable individual-specific effect and v_{it} stands for the remainder disturbance. It should be noted that μ_i is time-invariant and it covers any

individual-specific effect which is not included in the regression. This can be thought as the individual's unobserved ability. The remainder disturbance v_{it} changes with individuals and time and can be considered as the usual disturbance in the regression. In vector form (7.3) can be written as follows:

$$y = \alpha \iota_{NT} + X\beta + u = Z\delta + u \quad (7.5)$$

where y is $NT \times 1$, X is $NT \times K$, $Z = [\iota_{NT}, X]$, $\delta' = (\alpha', \beta')$ and ι_{NT} is a vector of ones of dimension NT . (7.4) can be written as:

$$u = Z_\mu \mu + v \quad (7.6)$$

where $u' = (u_{11}, \dots, u_{1T}, \dots, u_{21}, \dots, u_{2T}, \dots, u_{N1}, \dots, u_{NT})$ with the observations so that the slower index is over individuals and faster index is over time. $Z_\mu = I_N \otimes \iota_T$ where I_N is an identity matrix of dimension N , ι_T is a vector of ones of dimension T and $\otimes$ refers to Kronecker product. Z_μ is a selector matrix of ones and zeros, in other words simply the matrix of individual dummies which is included in the regression to estimate the μ_i if they are assumed to be fixed parameters. $\mu' = (\mu_1, \dots, \mu_N)$ and $v' = (v_{11}, \dots, v_{1T}, \dots, v_{N1}, \dots, v_{NT})$. $Z_\mu Z_\mu' = I_N \otimes J_T$ where J_T is a matrix of ones of dimension T and $P = Z_\mu (Z_\mu' Z_\mu)^{-1} Z_\mu'$, the projection matrix on Z_μ , reduces to $I_N \otimes \bar{J}_T$ where $\bar{J}_T = J_T/T$. P is a matrix which averages the observation across time for each individual, and $Q = I_{NT} - P$ is a matrix which obtains the deviations from individual means. For instance, regressing y on the matrix of dummy variables Z_μ gets the predicted values P_y which has a typical element $\bar{y}_i = \sum_{t=1}^T y_{it} / T$ repeated T times for each individual. The residuals of this regression are given by Q_y which has a typical element $(y_{it} - \bar{y}_i)$. P and Q are (i) symmetric idempotent matrices, i.e. $P' = P$ and $P^2 = P$. This means that $\text{rank}(P) = \text{tr}(P) = N$ and $\text{rank}(Q) = \text{tr}(Q) = N(T - 1)$. This uses the result that the rank of an idempotent matrix is equal to its trace. In addition, (ii) P and Q are orthogonal, i.e. $PQ = 0$ and (iii) they sum to the identity matrix $P + Q = I_{NT}$.

7.2.2.1 The fixed effects model

In this model, the μ_i are assumed to be fixed parameters to be estimated and the remainder disturbances stochastic with v_{it} independent and identically distributed IID $(0, \sigma_v^2)$. The X_{it} are assumed independent of the v_{it} for all i and t . The fixed effect

model represents an appropriate specification if a specific set of N firms are examined and the inference is restricted to the behavior of these sets of firms. Inference is conditional on the particular N firms included in the observations. The disturbances given with (7.6) can be substituted into (7.5) to obtain:

$$y = \alpha \iota_{NT} + X\beta + Z_\mu \mu + v = Z\delta + Z_\mu \mu + v \quad (7.7)$$

and then apply ordinary least squares (OLS) on (7.7) to obtain estimates of α, β and μ . Z is $NT \times (K + 1)$ and Z_μ , the matrix of individual dummies, is $NT \times N$. If N is large (7.7) will include too many individual dummies, and the matrix to be inverted by OLS is large and of dimension $(N + K)$. Actually, as α and β are the interested parameters, LSDV (least squares dummy variables) estimator can be retrieved from (7.7), by premultiplying the model by Q and executing OLS on the resulting transformed model:

$$Qy = QX\beta + Qv \quad (7.8)$$

It uses the fact that $QZ_\mu = Q\iota_{NT} = 0$, since $PZ_\mu = Z_\mu$. That means that the Q matrix eliminates the individual effects. This is a regression of $\tilde{y} = Qy$ with typical element $(y_{it} - \bar{y}_i)$ on $\tilde{X} = QX$ with typical element $(X_{it,k} - \bar{X}_{i,k})$ for the k th regressor, $k = 1, 2, \dots, K$. This includes the inversion of a $(K \times K)$ matrix rather than $(N + K) \times (N + K)$ as in (7.7). the resulting OLS estimator is:

$$\tilde{\beta} = (X'QX)^{-1}X'Qy \quad (7.9)$$

with $\text{var}(\tilde{\beta}) = \sigma_v^2(X'QX)^{-1} = \sigma_v^2(\tilde{X}'\tilde{X})^{-1}$. $\tilde{\beta}$ could be retrieved from (7.7) through the usage of results on partitioned inverse or the Frish-Waugh-Lovell theorem debated in Davidson and MacKinnon (1993, p. 19). This utilizes the fact that P is the projection matrix on Z_μ and $Q = I_{NT} - P$. Besides, generalized least squares (GLS) on (7.8), with the usage of generalized inverse, will also produce $\tilde{\beta}$.

For the simple regression

$$y_{it} = \alpha + \beta x_{it} + \mu_i + v_{it} \quad (7.10)$$

and averaging over time gives

$$\bar{y}_i = \alpha + \beta \bar{x}_i + \mu_i + \bar{v}_i \quad (7.11)$$

Therefore, the subtraction (7.11) from (7.10) produces

$$y_{it} - \bar{y}_i = \beta(x_{it} - \bar{x}_i) + (v_{it} - \bar{v}_i) \quad (7.12)$$

In addition, averaging across all observations in (7.10) gives

$$\bar{y}_i = \alpha + \beta \bar{x}_i + \bar{v}_i \quad (7.13)$$

where the restriction that $\sum_{i=1}^N \mu_i = 0$ is used. This can be described as an arbitrary restriction on the dummy variable coefficients to avoid the dummy variable trap, or perfect multicollinearity. Indeed only β and $(\alpha + \mu_i)$ are estimable from (7.10), and not α and μ_i separately, unless a restriction like $\sum_{i=1}^N \mu_i = 0$ is imposed. In this case, $\tilde{\beta}$ is obtained from regression (7.12), $\tilde{\alpha} = \bar{y}_i - \tilde{\beta} \bar{x}_i$ can be recovered from (7.13) and $\tilde{\mu}_i = \bar{y}_i - \tilde{\alpha} - \tilde{\beta} \bar{x}_i$ from (7.11). In case N is very large like big labor or consumer panels, regressions resembling (7.7) are not suitable as one is containing $(N - 1)$ dummies in the regression. This fixed effects (FE) least squares, which can be named also as least squares dummy variables (LSDV), suffers from a large loss of degrees of freedom. $(N - 1)$ extra parameters are estimated and the problem of multicollinearity among the regressors may be occurred by too many dummies. Besides, this FE estimator is not able to estimate the effect of any time-invariant variable like sex, race, religion, schooling or union participation. These time-invariant variables are eliminated by the Q transformation, the deviations from means transformation. Preferably, it is visible that these time-invariant variables are spanned by the individual dummies in (7.7) and as a result any regression package trying (7.7) will fail, signaling perfect multicollinearity. In case (7.7) is the true model, LSVD is the best linear unbiased estimator (BLUE) as long as v_{it} is the standard classical disturbance with mean 0 and variance-covariance matrix $\sigma_v^2 I_{NT}$. As $T \rightarrow \infty$, the FE estimator is consistent. On the other hand, if T is fixed and $N \rightarrow \infty$ which is typical in short labor panels, then only the FE estimator of β is consistent; the FE estimators of the individual effects $(\alpha + \mu_i)$ are not consistent as the number of these parameters increases with the increase of N . This incidental parameter problem is debated by Neyman Scott (1948) and reviewed by Lancaster (2000). When the fixed effects is the true model as in (7.7), OLS on (7.3) gives biased and inconsistent estimates of the regression parameters. This is an omission variables bias because OLS deletes the individual dummies when in reality they are relevant.

1) Testing for fixed effects

The joint significance of these dummies could be tested, i.e. $H_0; \mu_1 = \mu_2 = \dots = \mu_{N-1} = 0$, through executing an F-test. This is a simple Chow test with the restricted residual sums of squares (RRSS) being that of OLS on the pooled model and the unrestricted residual sums of squares (URSS) being that of the LSDV regression. If N is large, the Within transformation can be performed and that residual sum of squares can be used as the URSS. In this case

$$F_0 = \frac{(RRSS-URSS)/(N-1)}{URSS/(NT-N-K)} \sim F_{N-1, N(T-1)-K} \quad (7.14)$$

2) Computational warning

There is one computational warning for the usage of Within regression given by (7.12). The s^2 of this regression as produced from a typical regression package divides the residual sums of squares by $NT - K$ as the intercept and the dummies are not contained. The proper s^2 , which can be called s^{*2} from the LSDV regression in (7.7) would divide the same residual sums of squares by $N(T - 1) - K$. So, the variances retrieved from the Within regression (7.12) has to be adjusted by multiplying the variance-covariance matrix by (s^{*2}/s^2) or simply through multiplying by $[NT - K] / [N(T - 1) - K]$.

3) Robust estimates of the standard errors

For the Within estimator, Arellano (1987) proposes a simple method to get robust estimates of the standard errors which allow for a general variance-covariance matrix on the v_{it} as in White (1980). The panel can be stacked as an equation for each individual:

$$y_i = Z_i \delta + \mu_i \iota_T + v_i \quad (7.15)$$

where y_i is $T \times 1$, $Z_i = [\iota_T, X_i]$, X_i is $T \times K$, μ_i is a scalar, $\delta' = (\alpha, \beta')$, ι_T is a vector of ones of dimension T and v_i is $T \times 1$. In general, $E(v_i v_i') = \Omega_i$ for $i = 1, 2, \dots, N$, where Ω_i is a positive definite matrix of dimension T . $E(v_i v_j') = 0$ is still assumed, for $i \neq j$. T is assumed small and N large as in household or company panels, and the asymptotic results are executed for $N \rightarrow \infty$ and T fixed. Performing the Within transformation on this set of equations (7.15) gives

$$\tilde{y}_i = \tilde{X}_i \beta + \tilde{v}_i \quad (7.16)$$

where $\tilde{y} = Qy$, $\tilde{X} = QX$ and $\tilde{v} = Qv$, with $\tilde{y} = (\tilde{y}'_1, \dots, \tilde{y}'_N)'$ and $\tilde{y}_i = (I_T - \bar{J}_T)y_i$. Computing robust least squares on this system, as explained by White (1980), under the restriction that each equation has the same β one gets the Within estimator of β which has the asymptotic distribution as below:

$$N^{1/2}(\tilde{\beta} - \beta) \sim N(0, M^{-1}VM^{-1}) \quad (7.17)$$

where $M = \text{plim}(\tilde{X}'\tilde{X}) / N$ and $V = \text{plim}\sum_{i=1}^N(\tilde{X}'_i\Omega_i\tilde{X}_i)/N$. It should be noted that $\tilde{X}_i = (I_T - \bar{J}_T)X_i$ and $\tilde{X}'Q \text{diag}[\Omega_i]Q\tilde{X} = \tilde{X}'\text{diag}[\Omega_i]\tilde{X}$. In this case, V is estimated by $\tilde{V} = \sum_{i=1}^N \tilde{X}'_i\tilde{u}_i\tilde{u}'_i\tilde{X}_i / N$, where $\tilde{u}_i = \tilde{y}_i - \tilde{X}_i\tilde{\beta}$. Therefore, the robust asymptotic variance covariance matrix of β is estimated by

$$\text{var}(\tilde{\beta}) = (\tilde{X}'\tilde{X})^{-1}[\sum_{i=1}^N \tilde{X}'_i\tilde{u}_i\tilde{u}'_i\tilde{X}_i](\tilde{X}'\tilde{X})^{-1} \quad (7.18)$$

7.2.2.2 The random effects model

The fixed effects model contains too many parameters and the loss of degrees of freedom can be prevented if the μ_i can be assumed random. In this case $\mu_i \sim \text{IID}(0, \sigma_\mu^2)$, $v_{it} \sim \text{IID}(0, \sigma_v^2)$ and the μ_i are independent of the v_{it} . Additionally, the X_{it} are independent of the μ_i and v_{it} , for all i and t . If N individuals are drawn randomly from a large population, then the random effects model is a suitable specification. This is generally valid for household panel studies. The design of the panel is made carefully to make it representative of the population. In this case, N is usually large and a fixed effects model would cause to a huge loss of degrees of freedom. The individual effect is characterized as random and inference pertains to the population from which the sample was randomly drawn.

Nerlove and Balestra (1996) highlight Haavelmo's (1944) view that the population "consists *not* of an infinity of individuals, in general, but of an infinity of *decisions*" that each individual might make. This view is consistent with a random effects specification. From (7.6), the variance-covariance matrix can be computed

$$\begin{aligned} \Omega &= E(uu') = Z_\mu E(\mu\mu')Z'_\mu + E(vv') \\ &= \sigma_\mu^2(I_N \otimes J_T) + \sigma_v^2(I_N \otimes I_T) \end{aligned} \quad (7.19)$$

This implies a homoskedastic variance $\text{var}(u_{it}) = \sigma_\mu^2 + \sigma_v^2$ for all i and t , and an equicorrelated block-diagonal covariance matrix which shows serial correlation over time only between the disturbances of the same individual. In fact,

$$\begin{aligned} \text{cov}(u_{it}, u_{js}) &= \sigma_\mu^2 + \sigma_v^2 & \text{for } i = j, t = s \\ &= \sigma_\mu^2 & \text{for } i = j, t \neq s \end{aligned}$$

and zero otherwise. This also means that the correlation coefficient between u_{it} and u_{js} is

$$\begin{aligned} \rho = \text{correl}(u_{it}, u_{js}) &= 1 & \text{for } i = j, t = s \\ &= \sigma_\mu^2 / (\sigma_\mu^2 + \sigma_v^2) & \text{for } i = j, t \neq s \end{aligned}$$

and zero otherwise. In order to obtain the GLS estimator of the regression coefficients, Ω^{-1} is needed. This is a huge matrix for typical panels and is of dimension $NT \times NT$. No brute force inversion should be attempted even if the researcher's application has a small N and T . A simple trick will be followed devised by Wansbeek and Kapteyn (1982b, 1983) that allows the derivation of Ω^{-1} and $\Omega^{-1/2}$. Essentially, one replaces J_T by $T\bar{J}_T$ and I_T by $(E_T + \bar{J}_T)$ where E_T is by definition $(I_T - \bar{J}_T)$. In this case

$$\Omega = T\sigma_\mu^2(I_N \otimes \bar{J}_T) + \sigma_v^2(I_N \otimes E_T) + \sigma_v^2(I_N \otimes \bar{J}_T)$$

Collecting terms with the same matrices results,

$$\Omega = (T\sigma_\mu^2 + \sigma_v^2)(I_N \otimes \bar{J}_T) + \sigma_v^2(I_N \otimes E_T) = \sigma_1^2 P + \sigma_v^2 Q \quad (7.20)$$

where $\sigma_1^2 = T\sigma_\mu^2 + \sigma_v^2$. (7.20) is the spectral decomposition representation of Ω , with σ_1^2 being the first unique characteristic root of Ω of multiplicity N and σ_v^2 the second unique characteristic root of Ω of multiplicity $N(T-1)$. It is easy to verify, using the properties P and Q , that

$$\Omega^{-1} = \frac{1}{\sigma_1^2} P + \frac{1}{\sigma_v^2} Q \quad (7.21)$$

and

$$\Omega^{-1/2} = \frac{1}{\sigma_1} P + \frac{1}{\sigma_v} Q \quad (7.22)$$

In fact, $\Omega^r = (\sigma_1^2)^r P + (\sigma_v^2)^r Q$ where r is an arbitrary scalar. Now, GLS can be obtained as a weighted least squares. Fuller and Battese (1973, 1974) suggested premultiplying the regression equation given in (7.5) by $\sigma_v \Omega^{-1/2} = Q + (\sigma_v / \sigma_1) P$ and performing OLS on the resulting transformed regression. In this case, $y^* = \sigma_v \Omega^{-1/2} y$ has a typical element $y_{it} - \theta \bar{y}_i$, where $\theta = 1 - (\sigma_v / \sigma_1)$. This transformed

regression inverts a matrix of dimension $(K+1)$ and can easily be implemented using any regression package.

The best quadratic unbiased (BQU) estimators of the variance components arise naturally from the spectral decomposition of Ω . In fact, $u \sim (0, \sigma_u^2 P)$ and $Qu \sim (0, \sigma_v^2 Q)$ and

$$\hat{\sigma}_1^2 = \frac{u'Pu}{\text{tr}(P)} = T \sum_{i=1}^N \bar{u}_i^2 / N \quad (7.23)$$

and

$$\hat{\sigma}_v^2 = \frac{u'Qu}{\text{tr}(Q)} = \frac{\sum_{i=1}^N \sum_{t=1}^T (u_{it} - \bar{u}_i)^2}{N(T-1)} \quad (7.24)$$

provide the BQU estimators of σ_1^2 and σ_v^2 , respectively.

These are the analyses of variance-type estimators of the variance components and are minimum variance-unbiased under normality of the disturbances (Graybill, 1961). The true disturbances are not known and therefore (7.23) and (7.24) are not feasible. Wallace and Hussain (1969) suggest substituting OLS residual $\hat{u}_{OLS}$ instead of the true u . After all, under the random effects model, the OLS estimates are still unbiased and consistent, but no longer efficient. Amemiya (1971) shows that these estimators of the variance components have a different asymptotic distribution from that knowing the true disturbances. He suggests using the LSDV residuals instead of the OLS residuals. In this case $\tilde{u} = y - \tilde{\alpha}\iota_{NT} - X\tilde{\beta}$ where $\tilde{\alpha} = \bar{y}_.. - \bar{X}'_{..}\tilde{\beta}$ and $\bar{X}'_{..}$ is a $1 \times K$ vector of averages of all regressors. Substituting these $\tilde{u}$ for u in (7.23) and (7.24), the Amemiya-type estimators of the variance components are obtained. The resulting estimates of the variance components have the same asymptotic distribution as that knowing the true disturbances:

$$\begin{pmatrix} \sqrt{NT}(\hat{\sigma}_v^2 - \sigma_v^2) \\ \sqrt{N}(\hat{\sigma}_\mu^2 - \sigma_\mu^2) \end{pmatrix} \sim N \left(0, \begin{pmatrix} 2\sigma_v^4 & 0 \\ 0 & 2\sigma_\mu^4 \end{pmatrix} \right) \quad (7.25)$$

where $\hat{\sigma}_\mu^2 = (\hat{\sigma}_1^2 - \hat{\sigma}_v^2) / T$.

Swamy and Arora (1972) suggest running two regressions to get estimates of the variance components from the corresponding mean square errors of these regressions. The first regression is the Within regression, given in (7.12), which yields the following s^2 :

$$\hat{\sigma}_v^2 = [y'Qy - y'QX(X'QX)^{-1}X'Qy]/[N(T-1) - K] \quad (7.26)$$

The second regression is the Between regression which runs the regression of averages across time, i.e.

$$\bar{y}_i = \alpha + \bar{X}'_i \beta + u_i \quad i = 1, \dots, N \quad (7.27)$$

This is equivalent to premultiplying the model in (7.7) by P and running OLS. The only caution is that the latter regression has NT observations because it repeats the averages T times for each individual, while the cross-section regression in (7.27) is based on N observations. To remedy this, one can run the cross-section regression

$$\sqrt{T}\bar{y}_i = \alpha\sqrt{T} + \sqrt{T}\bar{X}'_i \beta + \sqrt{T}\bar{u}_i \quad (7.28)$$

where one can easily verify that $\text{var}(\sqrt{T}\bar{u}_i) = \sigma_1^2$. This regression will yield an s^2 given by

$$\hat{\sigma}_v^2 = (y'Py - y'PZ(Z'PZ)^{-1}Z'Py)/(N - K - 1) \quad (7.29)$$

Stacking the following two transformed regressions yields

$$\begin{pmatrix} Qy \\ Py \end{pmatrix} = \begin{pmatrix} QZ \\ PZ \end{pmatrix} \delta + \begin{pmatrix} Qu \\ Pu \end{pmatrix} \quad (7.30)$$

and the transformed error has mean 0 and variance-covariance matrix given by

$$\begin{pmatrix} \sigma_v^2 Q & 0 \\ 0 & \sigma_1^2 P \end{pmatrix}$$

Verifying OLS on this system of $2NT$ observations yields OLS on the pooled model (7.5). Also, GLS on this system yields GLS on (7.5). Alternatively, one could get rid of the constant α by running the following stacked regressions:

$$\begin{pmatrix} Qy \\ (P - \bar{J}_{NT})y \end{pmatrix} = \begin{pmatrix} QX \\ (P - \bar{J}_{NT})X \end{pmatrix} \beta + \begin{pmatrix} Qu \\ (P - \bar{J}_{NT})u \end{pmatrix} \quad (7.31)$$

This follows from the fact that $Q\iota_{NT} = 0$ and $(P - \bar{J}_{NT})\iota_{NT} = 0$. The transformed error has zero mean and variance-covariance matrix

$$\begin{pmatrix} \sigma_v^2 Q & 0 \\ 0 & \sigma_1^2 (P - \bar{J}_{NT}) \end{pmatrix}$$

OLS on this system yields OLS on (7.5) and GLS on (7.31) yields GLS on (7.5). In fact,

$$\hat{\beta}_{GLS} = [(X'QX/\sigma_v^2) + X'(P - \bar{J}_{NT})X/\sigma_1^2]^{-1}[(X'Qy/\sigma_v^2) + X'(P - \bar{J}_{NT})y/\sigma_1^2] \quad (7.32)$$

$$= [W_{XX} + \phi^2 B_{XX}]^{-1} [W_{Xy} + \phi^2 B_{Xy}]$$

with $\text{var}(\hat{\beta}_{GLS}) = \sigma_v^2 [W_{XX} + \phi^2 B_{XX}]^{-1}$. It should be noted that $W_{XX} = X'QX$, $B_{XX} = X'(P - \bar{J}_{NT})X$ and $\phi^2 = \sigma_v^2/\sigma_1^2$. Also, the Within estimator of β is $\tilde{\beta}_{\text{Within}} = W_{XX}^{-1}W_{Xy}$ and the Between estimator of β is $\hat{\beta}_{\text{Between}} = B_{XX}^{-1}B_{Xy}$. This shows that $\hat{\beta}_{GLS}$ is a matrix weighted average of $\tilde{\beta}_{\text{Within}}$ and $\hat{\beta}_{\text{Between}}$ weighing each estimate by the universe of its corresponding variance. In fact

$$\hat{\beta}_{GLS} = W_1 \tilde{\beta}_{\text{Within}} + W_2 \hat{\beta}_{\text{Between}} \quad (7.33)$$

where

$$W_1 = [W_{XX} + \phi^2 B_{XX}]^{-1} W_{XX}$$

and

$$W_2 = [W_{XX} + \phi^2 B_{XX}]^{-1} (\phi^2 B_{XX}) = I - W_1$$

This was demonstrated by Maddala (1971). It can be noted that (i) if $\sigma_\mu^2 = 0$ then $\phi^2 = 1$ and $\hat{\beta}_{GLS}$ reduces to $\hat{\beta}_{OLS}$. (ii) If $T \rightarrow \infty$, then $\phi^2 \rightarrow 0$ and $\hat{\beta}_{GLS}$ tends to $\tilde{\beta}_{\text{Within}}$. Also, if W_{XX} is huge compared to B_{XX} then $\hat{\beta}_{GLS}$ will be close to $\tilde{\beta}_{\text{Within}}$. However, if B_{XX} dominates W_{XX} then $\hat{\beta}_{GLS}$ tends to $\hat{\beta}_{\text{Between}}$. In other words, the Within estimator ignores the Between variation, and the Between estimator ignores the Within variation. The OLS estimator gives equal weight to the Between and Within variations. From (7.32), it is clear that $\text{var}(\tilde{\beta}_{\text{Within}}) - \text{var}(\hat{\beta}_{GLS})$ is a positive semidefinite matrix, since ϕ^2 is positive. However, as $T \rightarrow \infty$ for any fixed N , $\phi^2 \rightarrow 0$ and both $\hat{\beta}_{GLS}$ and $\tilde{\beta}_{\text{Within}}$ have the same asymptotic variance.

Another estimator of the variance components was suggested by Nerlove (1971a). His suggestion is to estimate σ_μ^2 as $\sum_{i=1}^N (\hat{\mu}_i - \bar{\mu})^2 / (N - 1)$ where $\hat{\mu}_i$ are the dummy coefficients estimates from the LSDV regression. σ_v^2 is estimated from the Within residual sums of squares divided by NT without correction for degrees of freedom.

Except for Nerlove's (1971a) method, one has to retrieve $\hat{\sigma}_\mu^2$ as $(\hat{\sigma}_1^2 - \hat{\sigma}_v^2)/T$. In this case, there is no guarantee that the estimate of $\hat{\sigma}_\mu^2$ would be nonnegative. Searle (1971) has an extensive discussion of the problem of negative estimates of the variance

components in the biometrics literature. One solution is to replace these negative estimates by zero. This in fact is the suggestion of the Monte Carlo study by Maddala and Mount (1973). This study finds that negative estimates occurred only when the true σ_μ^2 was small and close to zero. In these cases, OLS is still a viable estimator. Therefore, replacing negative $\hat{\sigma}_\mu^2$ by zero is not a bad sin after all, and the problem is dismissed as not being serious.

The properties of the various feasible GLS estimators of β are as follows. Under the random effects model, GLS based on the true variance components is BLUE, and all the feasible GLS estimators considered are asymptotically efficient as either N or $T \rightarrow \infty$. Maddala and Mount (1973) compared OLS, Within, Between, feasible GLS methods, MINQUE (Minimum Norm Quadratic Unbiased Estimation), Henderson's method III, true GLS and maximum likelihood estimation using their Monte Carlo study. They found little to choose among the various feasible GLS estimators in small samples and argued in favor of methods that were easier to compute. MINQUE was dismissed as more difficult to compute and the applied researcher given one shot at the data was warned to compute at least two methods of estimation, like an ANOVA feasible GLS and maximum likelihood to ensure that they do not yield drastically different results. If they do give different results, the authors diagnose misspecification. Taylor (1980) derived exact finite sample results for the one-way error component model. He compared the Within estimator with the Swamy-Arora feasible GLS estimator. He found the following results:

- Feasible GLS is more efficient than LSDV for all but the fewest degrees of freedom.
- The variance of feasible GLS is never more than 17% above the Cramer-Rao lower bound.
- More efficient estimators of the variance components do not necessarily yield more efficient feasible GLS estimators.

These finite sample results are confirmed by the Monte Carlo experiments carried out by Maddala and Mount (1973) and Baltagi (1981a).

Bellmann et al. (1989) consider the bias in estimating the variance components using the Wallace and Hussain (1969) method due to the replacement of the true disturbances by OLS residuals, also the bias in the regression coefficients due to the use of estimated

variance components rather than the true variance components. The magnitude of this bias is estimated using bootstrap methods for two economic applications. Only one application revealed considerable bias in estimating σ_μ^2 . However, this did not affect the bias much in the corresponding regression coefficients.

7.2.2.3 Fixed vs. Random

The choice between fixed effects and random effects models is not that easy as the comparison between these two models has caused a hot discussion in statistics as well as panel data econometrics literature. The early supporters of fixed effects model are Mundlak (1961) and Wallace and Hussain (1969) where Balestra and Nerlove (1966) support the random error component model. There is a specification test suggested by Hausman (1978) which is structured on the difference between the fixed and random effects estimators. Chamberlain (1984) discussed that the fixed effects model imposes testable restrictions on the parameters of the reduced form model where the validity of these restrictions should be checked before performing the fixed effects model. Mundlak (1978) debated that the random effects model assumes exogeneity of all the regressors with the random individual effects. On the contrary, fixed effects model enables endogeneity of all the regressors with these individual effects. That means that there is an “all” or “nothing” choice of exogeneity of all the regressors and the individual effects. As an opposition to the all or nothing choice, Hausman and Taylor (1981) allowed for some of the regressors to be correlated with the individual effects. These over-identification restrictions are testable using a Hausman-type test.

7.2.2.4 Maximum likelihood estimation

Under normality of the disturbances, the likelihood function can be written as

$$L(\alpha, \beta, \phi^2, \sigma_v^2) = \text{constant} - \frac{NT}{2} \log \sigma_v^2 + \frac{N}{2} \log \phi^2 - \frac{1}{2\sigma_v^2} u' \Sigma^{-1} u \quad (7.34)$$

where $\Omega = \sigma_v^2 \Sigma$, $\phi^2 = \sigma_v^2 / \sigma_1^2$ and $\Sigma = Q + \phi^{-2} P$ from (7.20). This uses the fact that, $|\Omega| = \text{product of its characteristic roots} = (\sigma_v^2)^{N(T-1)} (\sigma_1^2)^N = (\sigma_v^2)^{NT} (\phi^2)^{-N}$. It can be noted that there is a one-to-one correspondence between ϕ^2 and σ_μ^2 . In fact, $0 \leq \sigma_\mu^2 < \infty$ translates into $0 < \phi^2 \leq 1$. Brute force maximization of (7.34) leads to non-linear first order conditions (Amemiya, 1971). Instead, Breusch (1987) concentrates the likelihood with respect to α and σ_v^2 . In this case, $\hat{\alpha}_{mle} = \bar{y}_.. - \bar{X}'_{..} \hat{\beta}_{mle}$ and $\hat{\sigma}_{v,mle}^2 =$

$(1/NT)\hat{u}'\hat{\Sigma}^{-1}\hat{u}$ where $\hat{u}$ and $\hat{\Sigma}$ are based on maximum likelihood estimates of β, ϕ^2 and α . Let $d = y - X\hat{\beta}_{mle}$ then $\hat{\alpha}_{mle} = (1/NT)\iota'_{NT}d$ and $\hat{u} = d - \iota_{NT}\hat{\alpha}_{mle} = d - \bar{J}_{NT}d$. This implies that $\hat{\sigma}_{v,mle}^2$ can be rewritten as

$$\hat{\sigma}_{v,mle}^2 = d'[Q + \phi^2(P - \bar{J}_{NT})]d/NT \quad (7.35)$$

And the concentrated likelihood becomes

$$L_C(\beta, \phi^2) = \text{constant} - \frac{NT}{2} \log\{d'[Q + \phi^2(P - \bar{J}_{NT})]d\} + \frac{N}{2} \log \phi^2 \quad (7.36)$$

Maximizing (7.36) over ϕ^2 , given β , yields

$$\hat{\phi}^2 = \frac{d'Qd}{(T-1)d'(P - \bar{J}_{NT})d} = \frac{\sum \sum (d_{it} - \bar{d}_i)^2}{T(T-1)\sum (\bar{d}_i - \bar{d}_{..})^2} \quad (7.37)$$

Maximizing (7.36) over β , given ϕ^2 , yields

$$\hat{\beta}_{mle} = [X'(Q + \phi^2(P - \bar{J}_{NT}))X]^{-1}X'[Q + \phi^2(P - \bar{J}_{NT})]y \quad (7.38)$$

It can be iterated between β and ϕ^2 until convergence. Breusch (1987) shows that provided $T > 1$, any i th iteration β , call it β_i , gives $0 < \phi_{i+1}^2 < \infty$ in the $(i+1)$ th iteration. More importantly, Breusch (1987) shows that these ϕ_i^2 have a “remarkable property” of forming a monotonic sequence. In fact, starting from the Within estimator of β , for $\phi^2 = 0$, the next ϕ^2 is finite and positive and starts a monotonically increasing sequence of ϕ^2 . Similarly, starting from the Between estimator of β , for $(\phi^2 \rightarrow \infty)$ the next ϕ^2 is finite and positive and starts a monotonically decreasing sequence of ϕ^2 . Hence, to guard against the possibility of a local maximum, Breusch (1987) suggests starting with $\tilde{\beta}_{\text{Within}}$ and $\hat{\beta}_{\text{Between}}$ and iterating. If these two sequences converge to the same maximum, then this is the global maximum. If one starts with $\hat{\beta}_{\text{OLS}}$ for $\phi^2 = 1$, and the next iteration obtains a larger ϕ^2 , then we have a local maximum at the boundary $\phi^2 = 1$. Maddala (1971) finds that there are at most two maxima for the likelihood $L(\phi^2)$ for $0 < \phi^2 \leq 1$. Hence, it is needed to guard against local maximum.

7.2.2.5 Prediction

In order to predict S periods ahead for the i th individual, for the GLS model, knowing the variance-covariance structure of the disturbances, Goldberger (1962) showed that the best linear unbiased predictor (BLUP) of $y_{i,T+S}$ is

$$\hat{y}_{i,T+S} = Z'_{i,T+S} \hat{\delta}_{\text{GLS}} + \omega' \Omega^{-1} \hat{u}_{\text{GLS}} \quad \text{for } s \geq 1 \quad (7.39)$$

where $\hat{u}_{\text{GLS}} = y - Z\hat{\delta}_{\text{GLS}}$ and $\omega = E(u_{i,T+S}u)$. Note that for period $T+S$

$$u_{i,T+S} = \mu_i + v_{i,T+S} \quad (7.40)$$

and $\omega = \sigma_\mu^2(l_i \otimes l_T)$ where l_i is the i th column of I_N , i.e., l_i is a vector that has 1 in the i th position and 0 elsewhere. In this case

$$\omega' \Omega^{-1} = \sigma_\mu^2(l'_i \otimes l'_T) \left[\frac{1}{\sigma_1^2} P + \frac{1}{\sigma_v^2} Q \right] = \frac{\sigma_\mu^2}{\sigma_1^2} (l'_i \otimes l'_T) \quad (7.41)$$

since $(l'_i \otimes l'_T)P = (l'_i \otimes l'_T)$ and $(l'_i \otimes l'_T)Q = 0$. Using (7.41), the typical element of $\omega' \Omega^{-1} \hat{u}_{\text{GLS}}$ becomes $((T \sigma_\mu^2 / \sigma_1^2) \bar{\hat{u}}_{i,\text{GLS}})$ where $\bar{\hat{u}}_{i,\text{GLS}} = \sum_{t=1}^T \hat{u}_{it,\text{GLS}} / T$. Therefore, in (7.39), the BLUP for $y_{i,T+S}$ corrects the GLS prediction by a fraction of the mean of the GLS residuals corresponding to that i th individual. This predictor was considered by Taub (1979).

Baillie and Baltagi (1999) consider the practical situation of prediction from the error component regression model when the variance components are not known. They derive both theoretical and simulation evidence as to the relative efficiency of four alternative predictors: (i) an ordinary predictor, based on the optimal predictor given in (7.39), but with MLEs (maximum likelihood estimation) replacing population parameters; (ii) a truncated predictor that ignores the error component correction, given by the last term in (7.39), but uses MLEs for its regression parameters; (iii) a misspecified predictor which uses OLS estimates of the regression parameters; and (iv) a fixed effects predictor which assumes that the individual effects are fixed parameters that can be estimated. The asymptotic formula for MSE (mean squared error) prediction are derived for all four predictors. Using numerical and simulation results, these are shown to perform adequately in realistic sample sizes ($N=50$ and 500 and $T=10$ and 20). Both the analytical and sampling results show that there are substantial gains in mean square error prediction by using the ordinary predictor instead of the misspecified or the truncated predictors, especially with increasing $\rho = \sigma_\mu^2 / (\sigma_\mu^2 + \sigma_v^2)$ values. The reduction in MSE is about tenfold for $\rho = 0.9$ and a little more than twofold for $\rho = 0.6$ for various values of N and T . The fixed effects predictor performs remarkably well, being a close second to the ordinary predictor for all experiments. Simulation evidence confirms the importance of taking into account the individual effects when making predictions. The ordinary predictor and the fixed

effects predictor outperform the truncated and misspecified predictors and are recommended in practice.

In the light of the insights mentioned above, this study is based on the fixed effects panel data regression.

7.3 Empirical Findings

As mentioned in the methodology chapter in detail, the analysis is based on the data of 14 banks for the period of 2012-2015 on a quarterly basis. The independent variables of the analysis are the marketing resources and the marketing activities. The marketing resources consist of two different types of resources, namely the financial resources related to the marketing activities and the human resources of the marketing and the support staff. The marketing activities, on the other hand, include the variables related to the advertising, pricing, and to the distribution. Among the marketing activities, the impact of the advertising intensity, pricing mark-up, and the impact of the distribution intensity is examined. The dependent variables of the analysis are the indicators of the business performance. The measures for the business performance are “net profit growth vs. previous year”, “deposit volume growth vs. previous year”, “net profit / assets” and “the churn rate”. In addition, customer-based brand equity variable, which is constituted by the researcher based on the omnibus panel data provided by GfK, is examined to define both the direct and the mediating impact of the customer-based brand equity on the business performance. The customer-based brand equity variable is based on three dimensions; namely, brand awareness, brand loyalty, and brand associations. The operationalization of each variable is available in detail in the methodology chapter. The analyses are executed for short-term and long-term periods. The short-term period refers to around three months, and the long-term period refers to around two years.

The analysis consists of four steps. As mentioned before, in the first step of the analysis, Factor analysis is implemented to derive the customer-based brand equity variable from the three dimensions as mentioned above. The Factor analysis is executed using the SPSS 20 program. For the rest of the analyses in the second, third, and fourth steps, EViews 9 program is utilized. In the second step of the analysis, the unit root tests are implemented including all the variables. Unit root tests are executed to investigate

whether the variables are stationary or non-stationary. The results of the unit root tests are presented in Table 7.2.

Table 7.2 : Unit root tests.

VARIABLE	Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat		ADF - Fisher Chi-square		PP - Fisher Chi- square		Integration I (d)
	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	
LX1	-12,11	-14,21	-8,48	-9,31	120,31	126,46	154,05	212,19	I (0)
D(LX1)	-12,14	-10,82	-8,89	-5,52	126,10	81,06	325,98	262,65	
LX2	-1,30	-1,94	1,61	-1,07	16,39	37,31	25,65	66,63	I (1)
D(LX2)	-6,14	-6,61	-7,30	-5,86	104,70	85,49	248,80	211,91	
X4	-1,28	0,70	-0,71	1,53	30,31	13,62	53,61	24,37	I (1)
D(X4)	-3,11	-2,46	-2,72	-0,93	46,85	31,49	123,28	97,20	
X5	-0,11	1,13	-1,29	0,78	35,61	19,15	82,01	55,77	I (0)
D(X5)	-3,45	-1,24	-5,22	-3,06	78,15	55,48	216,96	183,20	
LX6	-10,41	-9,65	-8,70	-6,63	123,45	93,42	256,04	247,59	I (0)
D(LX6)	-8,40	-7,08	-8,00	-4,61	114,00	70,16	348,90	275,05	
LX7	-0,40	1,31	-4,15	-3,19	65,68	57,15	194,85	195,55	I (0)
D(LX7)	-1,79	2,57	-7,78	-4,93	111,20	75,16	308,29	255,35	
X9	-2,15	-1,05	-2,16	-0,20	43,64	24,95	73,01	59,58	I (1)
D(X9)	-4,98	-3,88	-5,83	-3,71	85,66	61,91	203,34	171,46	
X10	-5,08	-4,01	-6,32	-4,15	91,83	70,31	133,75	122,08	I (1)
D(X10)	-12,57	-10,48	-11,57	-8,69	147,12	108,74	256,52	216,70	
LX16	-11,21	-13,78	-7,76	-9,07	110,42	123,42	141,09	213,39	I (0)
D(LX16)	-11,62	-10,48	-8,77	-5,40	124,40	79,65	323,94	259,63	
LX17	-2,03	-2,40	1,82	-2,08	14,37	45,91	29,98	120,87	I (1)
D(LX17)	-7,21	-6,71	-8,59	-6,85	122,33	98,37	260,91	228,73	
Y11	-20,78	-11,48	-7,02	-4,03	65,86	62,38	40,12	39,37	I (0)
D(Y11)	-3,72	0,43	-5,69	-3,00	85,81	55,88	115,32	95,91	
Y2	-1,52	-2,59	-2,46	-2,17	54,76	43,94	88,02	92,13	I (1)
D(Y2)	-5,09	-3,51	-7,28	-4,44	105,92	71,50	255,04	219,91	
LY4	-2,22	0,01	2,76	-0,61	10,20	32,07	13,17	33,49	I (1)
D(LY4)	-1,53	-0,94	-4,50	-2,47	68,33	48,33	130,90	97,48	
Y2/Y4	-2,19	-3,43	-1,91	-2,36	46,22	45,43	77,36	81,72	I (0)
D(Y2/Y4)	-7,03	-5,73	-7,42	-4,58	106,61	71,99	254,75	214,43	
Y61	-4,32	-1,24	-3,05	-1,04	52,90	33,39	54,50	45,92	I (0)
D(Y61)	-4,88	-3,97	-4,89	-2,41	73,31	46,99	147,16	125,36	
Y7	-1,00	-2,49	-1,78	-2,39	43,92	46,29	61,49	77,84	I (0)
D(Y7)	-3,98	-1,28	-5,23	-1,60	78,85	42,95	154,44	116,37	
Z1	-5,49	-2,75	-3,04	0,52	54,16	25,29	39,18	19,75	I (0)
D(Z1)	-1,78	-2,48	-2,34	-2,75	46,22	55,72	101,23	133,58	

Table 7.2 (continued) : Unit root tests.

VARIABLE	Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat		ADF - Fisher Chi-square		PP - Fisher Chi- square		Integration I (d)
	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	Individual effects	Individual effects, individual linear trends	
Z2	-0,72	-3,77	-1,34	-2,54	33,76	47,62	38,65	26,97	I (1)
D(Z2)	0,88	4,68	-2,49	-0,03	44,09	23,01	114,85	95,49	
LZ3	-2,10	-1,16	1,02	0,75	7,39	6,07	13,34	3,97	I (1)
D(LZ3)	-1,80	-2,74	-1,05	-0,64	13,21	11,48	17,63	12,04	
LZ4	-5,47	2,15	-0,21	4,07	34,38	13,58	22,97	5,24	I (0)
D(LZ4)	0,11	-1,86	-0,25	-1,10	28,43	37,07	57,53	80,07	
LZ5	-2,22	-0,52	0,73	2,41	23,48	14,04	17,94	9,53	I (0)
D(LZ5)	-1,17	-2,03	-1,09	-0,74	31,84	29,26	59,50	62,54	
Z6	-2,74	-1,13	-2,65	-2,93	47,61	51,52	118,08	157,42	I (1)
D(Z6)	-6,74	-3,07	-11,10	-8,21	147,54	108,53	278,04	246,91	
Z7	-2,93	-4,66	-3,31	-2,03	54,71	43,66	100,33	85,88	I (1)
D(Z7)	-3,25	1,30	-6,46	-3,91	90,33	60,64	223,13	210,43	
Z8	-1,13	-0,01	-4,15	-2,76	66,35	53,94	168,46	160,90	I (1)
D(Z8)	-3,46	0,08	-8,12	-5,25	115,32	78,54	283,85	247,47	
Z9	-3,22	-4,25	-2,02	-1,54	37,17	36,15	72,81	57,18	I (0)
D(Z9)	-9,36	-11,69	-7,91	-6,47	106,36	72,56	252,01	203,98	
Z10	0,04	-1,73	-3,21	-3,98	53,63	62,15	91,81	126,22	I (1)
D(Z10)	-8,91	-8,92	-13,00	-12,02	148,74	115,55	204,13	203,21	
Z11	-9,89	-7,01	-4,74	-3,11	69,65	51,05	114,19	120,41	I (0)
D(Z11)	-6,17	-5,98	-9,46	-7,45	127,48	99,01	276,57	240,33	
Z12	14,99	20,98	-3,67	-3,00	40,78	34,02	59,21	57,95	I (1)
D(Z12)	13,23	16,57	-6,78	-4,43	66,31	44,78	135,91	106,92	
BRANDEQUITY	-5,72	-6,47	-4,90	-4,20	73,89	66,71	82,16	78,51	I (0)
D(BRANDEQUITY)	-10,08	-8,38	-8,82	-5,80	124,39	85,66	199,16	167,82	

The unit root tests are conducted for 29 variables that are used in the model. The test results show that among these 29 variables, 15 variables are I (0) which means stationary, and 14 variables are I (1) which means non-stationary. The dependent variables are required to be I (0). At least one of the explanatory variables is required to be I (0).

Following the unit root tests, fixed effects panel data regression is conducted in the third step. As there are many potential independent variables in the model, a stepwise estimation procedure is followed. Initially, all the variables are included in each equation. In each iteration, non-significant variables are eliminated using the backward method. Hence, the final versions of the equations include only the significant

variables for the relevant equation. As for the options in the regression analysis, cross section weights are used for weights in generalized least square. For the calculation of the coefficient covariance, cross section SUR is used. The estimated model determines the short-term and long-term relationships between the variables. However, only the significance level of the short-term estimated coefficients can be estimated with this method. Therefore, in order to define the significance level of the long-term coefficients, Wald test is conducted in EViews 9 as a last step of the analysis. The findings of the Wald test are presented in Appendix B.

7.3.1 The effective factors on net profit growth

The first business performance indicator examined in this study is the net profit growth which is a commonly used indicator for a performance investigation of a bank. The model is estimated for the equation,

$$y_{it} = \alpha + X'_{it}\beta + \theta y_{it-j} + u_{it} \quad i = 1, \dots, N; \quad t = 1, \dots, T; \quad j = 1, \dots, 4 \quad (7.42)$$

where y_{it} is the net profit growth, x_{1it} is the customer-based brand equity, x_{2it} is the growth of marketing expenditures, x_{3it} is the pricing mark-up, x_{4it} is the number of branches, x_{5it} is the number of personnel, x_{6it} is the national TV advertising expenditures, x_{7it} is the radio advertising expenditures, x_{8it} is the print advertising expenditures, x_{9it} is the internet advertising expenditures, x_{10it} is the cinema advertising expenditures, x_{11it} is the outdoor advertising expenditures, x_{12it} is the local TV advertising expenditures, x_{13it} is the ratio of human resources expenditures to the total bank expenditures, and x_{14it} is the ratio of marketing expenditures to the total bank expenditures.

If the equation is like that,

$$y_{it} = \alpha_0 + \beta_1 X_{1it} + \beta_2 X_{1it-1} + \theta y_{it-1} \quad (7.43)$$

the short-term effect is defined as β_1 as shown in (7.43) and long-term effect is estimated as indicated in (7.44).

$$(\beta_1 + \beta_2)/(1 - \theta) = \text{long term effect of } X_1 \quad (7.44)$$

The estimated equation is given in Table 7.3 with short-term and long-term relationships.

Table 7.3 : Estimated equation of net profit growth.

Dependent Variable: Y11				
Method: Panel EGLS (Cross-section weights)				
Sample (adjusted): 2013Q1 2015Q4				
Periods included: 12				
Cross-sections included: 14				
Total panel (balanced) observations: 168				
Linear estimation after one-step weighting matrix				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.43E+00	4,440	-0,548	0,585
Y11(-1)	4.18E-01	0,078	5,324	0,000
Y11(-3)	-7.21E-02	0,019	-3,800	0,000
BRANDEQUITY	2.51E-01	0,075	3,361	0,001
BRANDEQUITY(-4)	2.31E-01	0,073	3,174	0,002
X9	-1.28E-01	0,034	-3,725	0,000
X9(-4)	-4.92E-02	0,027	-1,845	0,067
Z1-Z2	8.92E-02	0,017	5,390	0,000
LZ4	1.67E+00	0,720	2,325	0,022
LZ5	-9.09E-01	0,320	-2,838	0,005
Z6	-4.63E-10	2,21E-10	-2,091	0,039
Z7(-1)	9,89E-08	4,33E-08	2,285	0,024
Z7(-2)	1,05E-07	4,22E-08	2,483	0,014
Z7(-4)	6,15E-08	3,42E-08	1,799	0,074
Z8	-3,44E-08	9,35E-09	-3,675	0,000
Z8(-1)	-2,79E-08	9,51E-09	-2,931	0,004
Z8(-2)	-2,85E-08	1,05E-08	-2,714	0,008
Z8(-3)	-2,82E-08	1,08E-08	-2,597	0,011
Z9(-2)	6,83E-08	3,59E-08	1,903	0,059
Z9(-3)	1,25E-07	3,66E-08	3,408	0,001
Z10	2,69E-08	1,03E-08	2,597	0,011
Z11(-3)	1,57E-07	2,89E-08	5,424	0,000
Z11(-4)	1,23E-07	2,70E-08	4,536	0,000
Z12	6,83E-07	3,09E-07	2,212	0,029
Z12(-1)	-1,93E-06	3,85E-07	-5,016	0,000
Z12(-3)	-1,09E-06	3,56E-07	-3,050	0,003
X1/X16	-3.04E+00	0,938	-3,240	0,002
X1(-1)/X16(-1)	3.55E+00	0,997	3,567	0,001
X6(-3)/X16(-3)	-7.39E+00	1,788	-4,130	0,000
X6(-4)/X16(-4)	-5.48E+00	2,048	-2,676	0,008
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0,722	Mean dependent var	0,011	
Adjusted R-squared	0,629	S.D. dependent var	0,547	
S.E. of regression	0,333	Sum squared resid	13,879	
F-statistic	7,729	Durbin-Watson stat	1,953	
Prob(F-statistic)	0			
Unweighted Statistics				
R-squared	0,483	Mean dependent var	0,025	
Sum squared resid	38,474	Durbin-Watson stat	1,878	

The equation presented in Table 7.3 examines both the short-term and long-term relationships. However, the long-term relationships cannot be recognized in the table. The long-term effects are estimated based on (7.44). Hence, Table 7.4 is summarized including the short-term and long-term relationships.

Table 7.4 : The effective factors on net profit growth.

Dependent Variable: Net Profit Growth	Short Term	Long Term
Customer-Based Brand Equity	2,51E-01 ***	7,36E-01 ***
Growth of Marketing Expenditures (x9)	-1,28E-01 ***	-2,70E-01 ***
Pricing Mark-Up (z1-z2)	8,92E-02 ***	1,36E-01 ***
Number of Branches (z4)	1,67E+00 **	2,56E+00 **
Number of Personnel (z5)	-9,09E-01 ***	-1,39E+00 ***
TV (national) Advertising Expenditures (z6)	-4,63E-10 **	-7,07E-10 **
Radio Advertising Expenditures (z7)		4,05E-07 ***
Print Advertising Expenditures (z8)	-3,44E-08 ***	-1,82E-07 ***
Internet Advertising Expenditures (z9)		2,95E-07 ***
Cinema Advertising Expenditures (z10)	2,69E-08 **	4,10E-08 **
Outdoor Advertising Expenditures (z11)		4,27E-07 ***
TV (local) Advertising Expenditures (z12)	6,83E-07 **	-3,57E-06 ***
Human Resources Expenditures / Total Bank Expenditures (x1/x16)	-3,04E+00 ***	7,90E-01
Marketing Expenditures / Total Bank Expenditures (x6/x16)		-1,97E+01 ***
* significant at 10%		
** significant at 5%		
*** significant at 1%		

According to the results indicated in Table 7.4, the marketing expenditure growth has a negative impact on the net profit growth both in the short term and in the long term. In addition, the ratio of the marketing resource expenditures to the total bank expenditures has a negative effect on the net profit growth in the long run, while it does not have any significant effect in the short run. The results also indicate that the ratio of the human resource expenditures to the total bank expenditures affect the net profit growth negatively in the short run and does not have any significant effect in the long run.

In terms of the pricing activities, the results confirm that as expected, there is a positive impact of the pricing mark-up on the net profit growth both in the short term and in the long term. Regarding the distribution intensity, which is an indicator of availability of the service, the results show that the number of personnel has a negative effect on the net profit growth both in the short run and in the long run. Oppositely, the number of branches creates a positive effect on the net profit growth both in the short run and in the long run.

The last dimension of the marketing activities is the advertising intensity identifying how much the customer is exposed to each type of the media. As it's seen in Table 7.4, each of the different media types influences the net profit growth of the banks in different directions and in different time horizons. The results display that the impact

of the TV advertising on the national channels and the print advertising is negative on the net profit growth both in the short term and in the long term. The results also demonstrate that the local TV advertising makes a positive effect on the net profit growth in the short run but a negative effect in the long run. The cinema advertising, on the other hand, affects the net profit growth positively both in the short run and in the long run. Based on the results, the radio advertisements, the internet, and the outdoor advertisements do not produce a significant effect on the net profit growth in the short run, while their positive impacts on the net profit growth seem to be relevant in the long run.

The last variable, which is significant in terms of the impact on the net profit growth, is the customer-based brand equity. According to the results, the brand equity of the bank has a positive impact on the net profit growth both in the short term and in the long term.

7.3.2 The effective factors on the ratio of the net profit to the assets

The second business performance indicator which is examined in this study is the ratio of the net profit to the assets which is another commonly used indicator for a performance investigation of a bank. The model is estimated for the equation (7.42) where y_{it} is the ratio of the net profit to the assets, x_{1it} is the customer-based brand equity, x_{2it} is the growth of human resources expenditures, x_{3it} is the growth of marketing expenditures, x_{4it} is the pricing mark-up, x_{5it} is the number of ATMs, x_{6it} is the number of branches, x_{7it} is the national TV advertising expenditures, x_{8it} is the radio advertising expenditures, x_{9it} is the print advertising expenditures, x_{10it} is the internet advertising expenditures, x_{11it} is the cinema advertising expenditures, x_{12it} is the outdoor advertising expenditures, x_{13it} is the local TV advertising expenditures, and x_{14it} is the ratio of marketing expenditures to the total bank expenditures.

The estimated equation is given in Table 7.5 with short-term and long-term relationships.

Table 7.5 : Estimated equation of net profit / assets.

Dependent Variable: Y2/Y4				
Method: Panel EGLS (Cross-section weights)				
Sample (adjusted): 2013Q1 2015Q4				
Periods included: 12				
Cross-sections included: 14				
Total panel (balanced) observations: 168				
Linear estimation after one-step weighting matrix				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.01E-02	0,015	0,674	0,502
Y2(-4)/Y4(-4)	2.31E-01	0,051	4,548	0,000
BRANDEQUITY	6.41E-04	0,000	2,071	0,040
X5(-2)	-1.09E-03	0,000	-2,192	0,030
X5(-4)	1.01E-03	0,000	2,149	0,034
X10(-1)	-2.16E-04	0,000	-3,720	0,000
Z1-Z2	1.47E-04	0,000	2,578	0,011
LZ3	-5.96E-03	0,001	-4,620	0,000
LZ4	5.91E-03	0,003	2,224	0,028
Z6(-2)	-1.95E-12	4,76E-13	-4,091	0,000
Z6(-4)	1,29E-12	4,66E-13	2,774	0,006
Z7(-1)	5,19E-10	1,89E-10	2,751	0,007
Z7(-3)	-3,44E-10	1,65E-10	-2,078	0,040
Z8	-1,57E-10	3,49E-11	-4,502	0,000
Z8(-1)	-1,45E-10	3,93E-11	-3,696	0,000
Z8(-4)	1,30E-10	3,73E-11	3,474	0,001
Z9	3,42E-10	1,49E-10	2,304	0,023
Z9(-1)	7,26E-10	1,36E-10	5,345	0,000
Z9(-3)	2,05E-10	1,13E-10	1,806	0,073
Z9(-4)	-3,53E-10	1,18E-10	-2,986	0,003
Z10	1,17E-10	4,43E-11	2,634	0,010
Z11	2,80E-10	9,97E-11	2,808	0,006
Z12(-1)	-2,62E-09	1,02E-09	-2,560	0,012
Z12(-4)	-7,87E-09	3,26E-09	-2,414	0,017
X7(-3)/X17(-3)	-1.80E-02	0,004	-4,061	0,000
X7(-4)/X17(-4)	-1.26E-02	0,004	-2,822	0,006
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0,829	Mean dependent var		0,004
Adjusted R-squared	0,779	S.D. dependent var		0,003
S.E. of regression	0,001	Sum squared resid		0,000
F-statistic	16,503	Durbin-Watson stat		1,948
Prob(F-statistic)	0,000			
Unweighted Statistics				
R-squared	0,690	Mean dependent var		0,003
Sum squared resid	0,000	Durbin-Watson stat		1,767

The equation presented in Table 7.5 examines both the short-term and long-term relationships. However, the long-term relationships cannot be recognized in the table. The long-term effects are estimated based on (7.44). Hence, Table 7.6 is summarized including the short-term and long-term relationships.

Table 7.6 : The effective factors on net profit / assets.

Dependent Variable: Net Profit / Assets	Short Term	Long Term
Customer-Based Brand Equity	6,41E-04 **	8,34E-04 **
Growth of Human Resources Expenditures (x5)		-1,04E-04
Growth of Marketing Expenditures (x10)		-2,80E-04 ***
Pricing Mark-Up (z1-z2)	1,47E-04 **	1,91E-04 **
Number of ATMs (z3)	-5,96E-03 ***	-7,74E-03 ***
Number of Branches (z4)	5,91E-03 **	7,68E-03 **
TV (national) Advertising Expenditures (6)		-8,51E-13
Radio Advertising Expenditures (z7)		2,28E-10
Print Advertising Expenditures (z8)	-1,57E-10 ***	-2,25E-10 ***
Internet Advertising Expenditures (z9)	3,42E-10 **	1,20E-09 ***
Cinema Advertising Expenditures (z10)	1,17E-10 ***	1,52E-10 ***
Outdoor Advertising Expenditures (z11)	2,80E-10 ***	3,64E-10 ***
TV (local) Advertising Expenditures (z12)		-1,36E-08 ***
Marketing Expenditures / Total Bank Expenditures (x7/x17)		-3,98E-02 ***
* significant at 10%		
** significant at 5%		
*** significant at 1%		

As it's seen in Table 7.6, both the marketing expenditure growth and the ratio of the marketing resource expenditures to the total bank expenditures create a negative impact on the ratio of the net profit to the assets in the long term, while they do not have any significant effect in the short term.

The results also indicate that most of the marketing activities have significant impact on the ratio of the net profit to the assets. Hence, based on the results, there is a positive effect of the pricing mark-up on the ratio of the net profit to the assets both in the short term and in the long term, just like in the first equation.

The results highlight that the number of ATMs has a negative impact on the ratio of the net profit to the assets both in the short run and in the long run. However, the number of branches makes a positive effect on the ratio of net profit to the assets both in the short term and in the long term, as it's seen in the previous equation.

In terms of the impact of the media types, the results display that the TV advertising on the national channels and the radio advertising do not have any significant impact on the ratio of the net profit to the assets. The results also show that the local TV advertising does not produce any significant effect on the ratio of the net profit to the assets in the short run, but it has a negative impact in the long run. As it's seen in Table 7.6, the print advertising creates a negative effect on the ratio of the net profit to the assets both in the short term and in the long term, just like in the first equation.

Oppositely; the internet advertising, the cinema, and the outdoor advertising affect the ratio of the net profit to the assets positively both in the short run and in the long run.

In terms of customer-based brand equity, it's necessary to note that the brand equity of the bank has a positive impact on the ratio of the net profit to the assets both in the short term and in the long term, same as in the first equation.

7.3.3 The effective factors on the deposit volume growth

The third business performance indicator which is examined in this study is the deposit volume growth. The model is estimated for the equation (7.42) where y_{it} is the deposit volume growth, x_{1it} is the customer-based brand equity, x_{2it} is the growth of human resources expenditures, x_{3it} is the growth of marketing expenditures, x_{4it} is the pricing mark-up, x_{5it} is the number of branches, x_{6it} is the national TV advertising expenditures, x_{7it} is the print advertising expenditures, x_{8it} is the internet advertising expenditures, x_{9it} is the cinema advertising expenditures, x_{10it} is the outdoor advertising expenditures, x_{11it} is the local TV advertising expenditures, x_{12it} is the ratio of human resources expenditures to the total bank expenditures, x_{13it} is the marketing expenditures to the total bank expenditures.

The estimated equation is given in Table 7.7 with short-term and long-term relationships.

Table 7.7 : Estimated equation of deposit volume growth.

Dependent Variable: Y61				
Method: Panel EGLS (Cross-section weights)				
Sample (adjusted): 2013Q1 2015Q4				
Periods included: 12				
Cross-sections included: 14				
Total panel (balanced) observations: 168				
Linear estimation after one-step weighting matrix				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.94E+00	0,840	-2,303	0,023
Y61(-1)	2.77E-01	0,063	4,363	0,000
Y61(-4)	-4.17E-01	0,058	-7,176	0,000
BRANDEQUITY	3.28E-02	0,018	1,790	0,076
X4(-1)	-1.25E-01	0,073	-1,716	0,089
X4(-2)	2.98E-01	0,072	4,152	0,000
X4(-4)	-1.70E-01	0,064	-2,639	0,009
X9	-2.59E-02	0,009	-2,949	0,004
X9(-2)	-1.89E-02	0,007	-2,790	0,006
X9(-4)	2.24E-02	0,007	3,263	0,001
Z1-Z2	-9.15E-03	0,002	-3,792	0,000
LZ4	3.26E-01	0,122	2,668	0,009
Z6(-2)	8,72E-11	2,80E-11	3,118	0,002
Z6(-4)	-1,21E-10	2,75E-11	-4,391	0,000
Z8(-1)	3,31E-09	1,80E-09	1,844	0,068
Z9	-2,26E-08	6,04E-09	-3,748	0,000
Z9(-4)	1,37E-08	5,59E-09	2,445	0,016
Z10	-5,29E-09	2,30E-09	-2,297	0,023
Z10(-1)	1,19E-08	2,36E-09	5,057	0,000
Z11	1,81E-08	5,75E-09	3,145	0,002
Z11(-3)	-1,98E-08	6,43E-09	-3,078	0,003
Z12(-4)	2,46E-07	1,44E-07	1,708	0,090
X1/X16	-1.22E+00	0,246	-4,959	0,000
X1(-1)/X16(-1)	6.88E-01	0,274	2,513	0,013
X1(-4)/X16(-4)	4.20E-01	0,198	2,124	0,036
X6/X16	1.98E+00	0,635	3,119	0,002
X6(-1)/X16(-1)	1.90E+00	0,661	2,871	0,005
X6(-2)/X16(-2)	1.22E+00	0,534	2,293	0,024
X6(-3)/X16(-3)	1.34E+00	0,529	2,542	0,012
X6(-4)/X16(-4)	-2.53E+00	0,691	-3,661	0,000
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0,813	Mean dependent var		0,205
Adjusted R-squared	0,750	S.D. dependent var		0,108
S.E. of regression	0,048	Sum squared resid		0,285
F-statistic	12,933	Durbin-Watson stat		2,062
Prob(F-statistic)	0,000			
Unweighted Statistics				
R-squared	0,758	Mean dependent var		0,179
Sum squared resid	0,312	Durbin-Watson stat		1,945

The equation presented in Table 7.7 examines both the short-term and long-term relationships. However, the long-term relationships cannot be recognized in the table. The long-term effects are estimated based on (7.44). Hence, Table 7.8 is summarized including the short-term and long-term relationships.

Table 7.8 : The effective factors on deposit volume growth.

Dependent Variable: Deposit Volume Growth	Short Term	Long Term
Customer-Based Brand Equity	3,28E-02 *	2,88E-02 *
Growth of Human Resources Expenditures (x4)		3,14E-03
Growth of Marketing Expenditures (x9)	-2,59E-02 ***	-1,96E-02
Pricing Mark-Up (z1-z2)	-9,15E-03 ***	-8,02E-03 ***
Number of Branches (z4)	3,26E-01 ***	2,86E-01 ***
TV (national) Advertising Expenditures (z6)		-2,93E-11
Print Advertising Expenditures (z8)		2,91E-09 *
Internet Advertising Expenditures (z9)	-2,26E-08 ***	-7,87E-09
Cinema Advertising Expenditures (z10)	-5,29E-09 **	5,83E-09 **
Outdoor Advertising Expenditures (z11)	1,81E-08 ***	-1,48E-09
TV (local) Advertising Expenditures (z12)		2,16E-07
Human Resources Expenditures / Total Bank Expenditures (x1/x16)	-1,22E+00 ***	-9,79E-02
Marketing Expenditures / Total Bank Expenditures (x6/x16)	1,98E+00 ***	3,43E+00 ***
* significant at 10%		
** significant at 5%		
*** significant at 1%		

According to the results indicated in Table 7.8, the marketing expenditure growth and the ratio of the human resource expenditures to the total bank expenditures both make a negative impact on the deposit volume growth in the short run, whereas they do not produce any significant impact in the long run. However, the ratio of the marketing resource expenditures to the total bank expenditures has a positive effect both in the short term and in the long term on the deposit volume growth.

In terms of the pricing mark-up, the results indicate that there is a negative impact of the pricing mark-up on the deposit volume growth both in the short term and in the long term, as expected.

There is only one dimension of distribution intensity having a significant impact on the deposit volume growth; namely, the number of the branches. As the results display, the number of branches creates a positive impact on the deposit volume growth both in the short run and in the long run.

Concerning the different media types, the print media advertisement, the internet, the cinema, and the outdoor advertisements, except for the TV and radio advertisements, all significantly influence the level of deposit volume of the banks in both time horizons, as it is seen in the equation above. Based on the results, the print advertising has a positive impact on the deposit volume growth in the long run, where it does not have any significant impact in the short run. On the other hand, internet advertising produces a negative effect on the deposit volume growth in the short term and does

not have any significant effect in the long term. According to the results, cinema advertising affects the deposit volume growth negatively in the short term. However, this negative impact changes through the time, and it creates a positive impact on the deposit volume growth in the long term. The results also highlight that the outdoor advertisements influence the deposit volume growth positively in the short run and do not make any significant effect in the long run.

Regarding the effect of the customer-based brand equity, the results demonstrate that the customer-based brand equity of the bank has a positive effect on the growth of the deposit volume both in the short term and in the long term, like in the first two equations.

7.3.4 The effective factors on the churn rate

The last business performance indicator which is examined in this study is the churn rate which is a subjective indicator obtained by an omnibus panel. The model is estimated for the equation (7.42) where y_{it} is the churn rate, x_{1it} is the customer-based brand equity, x_{2it} is the growth of human resources expenditures, x_{3it} is the pricing mark-up, x_{4it} is the number of personnel, x_{5it} is the national TV advertising expenditures, x_{6it} is the radio advertising expenditures, x_{7it} is the print advertising expenditures, x_{8it} is the internet advertising expenditures, x_{9it} is the cinema advertising expenditures, x_{10it} is the outdoor advertising expenditures, x_{11it} is the local TV advertising expenditures, x_{12it} is the ratio of human resources expenditures to the total bank expenditures, x_{13it} is the ratio of marketing expenditures to the total bank expenditures.

The estimated equation is given in Table 7.9 with short-term and long-term relationships.

Table 7.9 : Estimated equation of churn rate.

Dependent Variable: Y7				
Method: Panel EGLS (Cross-section weights)				
Sample (adjusted): 2013Q1 2015Q4				
Periods included: 12				
Cross-sections included: 14				
Total panel (balanced) observations: 168				
Linear estimation after one-step weighting matrix				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.33E+00	2,825	-2,593	0,011
Y7(-1)	5.03E-01	0,085	5,939	0,000
Y7(-3)	-2.97E-01	0,084	-3,543	0,001
BRANDEQUITY(-4)	-1.36E-01	0,067	-2,014	0,046
X4(-4)	1.13E+00	0,429	2,638	0,009
Z1-Z2	3.93E-02	0,016	2,471	0,015
LZ5	1.37E+00	0,335	4,079	0,000
Z6(-4)	-7,15E-10	2,13E-10	-3,363	0,001
Z7(-4)	-1,58E-07	5,71E-08	-2,771	0,007
Z8	-5,52E-08	1,67E-08	-3,309	0,001
Z8(-3)	-5,19E-08	1,88E-08	-2,756	0,007
Z8(-4)	5,84E-08	1,83E-08	3,188	0,002
Z9(-2)	2,15E-07	5,71E-08	3,771	0,000
Z9(-3)	-1,14E-07	5,82E-08	-1,961	0,052
Z10	-4,32E-08	1,86E-08	-2,327	0,022
Z10(-1)	7,36E-08	1,65E-08	4,452	0,000
Z10(-4)	3,25E-08	1,25E-08	2,604	0,010
Z11	2,77E-07	5,38E-08	5,155	0,000
Z11(-1)	-1,81E-07	5,59E-08	-3,238	0,002
Z11(-2)	-2,27E-07	5,16E-08	-4,399	0,000
Z12(-1)	1,40E-06	4,57E-07	3,071	0,003
Z12(-2)	1,57E-06	4,82E-07	3,267	0,001
Z12(-3)	9,10E-07	4,48E-07	2,034	0,044
Z12(-4)	2,23E-06	1,04E-06	2,147	0,034
X1/X16	-3.44E+00	1,232	-2,790	0,006
X1(-2)/X16(-2)	-3.20E+00	1,308	-2,444	0,016
X1(-3)/X16(-3)	2.12E+00	1,278	1,660	0,100
X1(-4)/X16(-4)	-3.80E+00	1,363	-2,792	0,006
X6/X16	-1.10E+01	2,592	-4,250	0,000
X6(-1)/X16(-1)	-1.24E+01	2,819	-4,396	0,000
X6(-4)/X16(-4)	-1.55E+01	2,818	-5,516	0,000
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0,942	Mean dependent var	1,023	
Adjusted R-squared	0,922	S.D. dependent var	0,844	
S.E. of regression	0,310	Sum squared resid	11,931	
F-statistic	46,615	Durbin-Watson stat	2,165	
Prob(F-statistic)	0,000			
Unweighted Statistics				
R-squared	0,865	Mean dependent var	0,969	
Sum squared resid	14,076	Durbin-Watson stat	2,300	

The equation presented in Table 7.9 examines both the short-term and long-term relationships. However, the long-term relationships cannot be recognized in the table. The long-term effects are estimated based on (7.44). Hence, Table 7.10 is summarized including the short-term and long-term relationships.

Table 7.10 : The effective factors on churn rate.

Dependent Variable: Churn Rate	Short Term	Long Term
Customer-Based Brand Equity		-1,71E-01 *
Growth of Human Resources Expenditures (x4)		1,42E+00 **
Pricing Mark-Up (z1-z2)	3,93E-02 **	4,94E-02 **
Number of Personnel (z5)	1,37E+00 ***	1,72E+00 ***
TV (national) Advertising Expenditures (z6)		-8,99E-10 ***
Radio Advertising Expenditures (z7)		-1,99E-07 **
Print Advertising Expenditures (z8)	-5,52E-08 ***	-6,14E-08 *
Internet Advertising Expenditures (z9)		1,27E-07
Cinema Advertising Expenditures (z10)	-4,32E-08 **	7,91E-08 **
Outdoor Advertising Expenditures (z11)	2,77E-07 ***	-1,65E-07
TV (local) Advertising Expenditures (z12)		7,69E-06 ***
Human Resources Expenditures / Total Bank Expenditures (x1/x16)	-3,44E+00 ***	-1,05E+01 ***
Marketing Expenditures / Total Bank Expenditures (x6/x16)	-1,10E+01 ***	-4,90E+01 ***
* significant at 10%		
** significant at 5%		
*** significant at 1%		

According to the results presented in Table 7.10, the human resources expenditure growth has a positive impact on the churn rate in the long term, while its impact does not seem relevant in the short term. However, the ratio of the human resources expenditures to the total bank expenditures and the ratio of the marketing expenditures to the total bank expenditures both make a negative effect on the churn rate both in the short run and in the long run. These results confirm that the expenditures in human resources and marketing activities both pay off in terms of retaining the existing customers with their negative impact on the churn rate.

In terms of pricing mark-up variable, the results display that there is a positive impact of the pricing mark-up on the churn rate both in the short term and in the long term. This result shows that when the bank increases the prices in terms of the interest rate of the customer loans, and/or decreases the benefits of the customer in terms of the interest rate of the deposits, the customers prefer to leave and change the bank. Hence, this result highlights that the price is an important indicator for the selection of the banks from a customer point of view.

There is only one significant measure among the distribution intensity variable in terms of the impact on churn rate, which is the number of the personnel. As it's seen in Table 7.10, the number of personnel affect the churn rate positively both in the short run and in the long run.

Among different media types, all media except for internet advertising is found significant in terms of the impact on the churn rate. Based on the results, TV advertising on the national channels and the radio advertising do not create any significant effect on the churn rate in the short term, but they have a negative effect on the churn rate in the long term. The results also indicate that the local TV advertising has a positive impact on the churn rate in the long term, while it does not have any significant impact in the short term. In addition, the print advertising affects the churn rate negatively both in the short term and in the long term, like in the first two equations. Cinema advertising, on the other hand, has a negative effect on the churn rate in the short run and a positive effect in the long run. According to the results, the outdoor advertisements do not produce any significant effect on the churn rate in the long term, but they are in a positive relationship with the churn rate in the short term.

Finally, concerning the impact of the customer-based brand equity on the churn rate, the results demonstrate that the customer-based brand equity has a negative impact on the churn rate in the long term, where it does not have any significant impact in the short term. This result confirms that where the customer has positive feelings, thoughts, and perceptions towards the bank which constitute the brand equity, it makes a positive effect on the customer retention by decreasing the churn rate. This result is also consistent in terms of the brand loyalty perspective, knowing that one of the dimensions of the brand equity is customer loyalty which is expected to have a negative impact on the churn rate. Hence, the results once again confirmed that the brand equity is an important factor in terms of the customer retention.

7.3.5 The effective factors on the customer-based brand equity

As mentioned before, there are two different roles of the customer-based brand equity in the proposed model. Hence, the customer-based brand equity has a direct impact on the business performance, as well as it has a mediating role between the marketing resources, marketing activities and the business performance. Thus, in the above-mentioned four equations, the direct impact of the resources and the marketing activities on the business performance indicators is discussed. In addition to them, this equation analyzes the impact of the resources and the marketing activities on the customer-based brand equity. The model is estimated for the equation (7.42) where y_{it} is the customer-based brand equity, x_{1it} is the growth of human resources

expenditures, x_{2it} is the growth of marketing expenditures, x_{3it} is the number of ATMs, x_{4it} is the number of branches, x_{5it} is the number of personnel, x_{6it} is the national TV advertising expenditures, x_{7it} is the radio advertising expenditures, x_{8it} is the print advertising expenditures, x_{9it} is the internet advertising expenditures, x_{10it} is the cinema advertising expenditures, x_{11it} is the outdoor advertising expenditures, x_{12it} is the local TV advertising expenditures, x_{13it} is the ratio of human resources expenditures to the assets, x_{14it} is the marketing expenditures to the assets.

The estimated equation is given in Table 7.11 with short-term and long-term relationships.



Table 7.11 : Estimated equation of customer-based brand equity.

Dependent Variable: BRANDEQUITY				
Method: Panel EGLS (Cross-section weights)				
Sample (adjusted): 2013Q1 2015Q4				
Periods included: 12				
Cross-sections included: 14				
Total panel (balanced) observations: 168				
Linear estimation after one-step weighting matrix				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.81E+00	1,998	-1,906	0,059
BRANDEQUITY(-1)	1.66E-01	0,071	2,336	0,021
BRANDEQUITY(-2)	-3.16E-01	0,077	-4,078	0,000
X5(-1)	-4.27E-01	0,128	-3,330	0,001
X5(-4)	-4.32E-01	0,091	-4,730	0,000
X10(-2)	2.21E-02	0,008	2,898	0,004
X10(-3)	5.11E-02	0,008	6,707	0,000
X10(-4)	-2.58E-02	0,006	-4,366	0,000
LZ3	4.95E-01	0,213	2,320	0,022
LZ4	9.99E-01	0,421	2,371	0,019
LZ5	-7.04E-01	0,268	-2,625	0,010
Z6(-1)	2.35E-10	1,05E-10	2,240	0,027
Z6(-3)	-3.66E-10	9,12E-11	-4,011	0,000
Z7(-2)	-8.62E-08	3,22E-08	-2,675	0,009
Z8	2.84E-08	6,94E-09	4,100	0,000
Z8(-2)	2.77E-08	7,08E-09	3,917	0,000
Z8(-3)	3.96E-08	8,75E-09	4,524	0,000
Z9(-1)	-3.96E-08	2,28E-08	-1,737	0,085
Z10	2.10E-08	8,24E-09	2,551	0,012
Z10(-3)	1.95E-08	6,54E-09	2,980	0,004
Z11(-2)	-5.99E-08	2,65E-08	-2,259	0,026
Z12(-1)	1.14E-06	3,04E-07	3,736	0,000
Z12(-3)	5.73E-07	3,00E-07	1,912	0,058
X2(-1)/Y4(-1)	1.68E+02	45,792	3,669	0,000
X2(-3)/Y4(-3)	-1.54E+02	40,723	-3,776	0,000
X2(-4)/Y4(-4)	9.08E+01	43,530	2,085	0,039
X7/Y4	-4.65E+02	106,623	-4,357	0,000
X7(-1)/Y4(-1)	-2.72E+02	112,584	-2,417	0,017
X7(-2)/Y4(-2)	-2.53E+02	121,318	-2,088	0,039
X7(-3)/Y4(-3)	-3.74E+02	120,761	-3,101	0,002
X7(-4)/Y4(-4)	-1.94E+02	112,383	-1,725	0,087
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0,987	Mean dependent var		0,059
Adjusted R-squared	0,983	S.D. dependent var		1,245
S.E. of regression	0,163	Sum squared resid		3,276
F-statistic	220,486	Durbin-Watson stat		1,939
Prob(F-statistic)	0,000			
Unweighted Statistics				
R-squared	0,977	Mean dependent var		-0,001
Sum squared resid	3,711	Durbin-Watson stat		1,903

The equation presented in Table 7.11 examines both the short-term and long-term relationships. However, the long-term relationships cannot be recognized in the table. The long-term effects are estimated based on (7.44). Hence, Table 7.12 is summarized including the short-term and long-term relationships.

Table 7.12 : The effective factors on customer-based brand equity.

Dependent Variable: Customer-Based Brand Equity	Short Term	Long Term
Growth of Human Resources Expenditures (x5)		-7,47E-01 ***
Growth of Marketing Expenditures (x10)		4,13E-02 ***
Number of ATMs (z3)	4,95E-01 **	4,31E-01 **
Number of Branches (z4)	9,99E-01 **	8,69E-01 **
Number of Personnel (z5)	-7,04E-01 ***	-6,12E-01 ***
TV (national) Advertising Expenditures (z6)		-1,13E-10
Radio Advertising Expenditures (z7)		-7,50E-08 ***
Print Advertising Expenditures (z8)	2,84E-08 ***	8,33E-08 ***
Internet Advertising Expenditures (z9)		-3,44E-08 *
Cinema Advertising Expenditures (z10)	2,10E-08 **	3,53E-08 ***
Outdoor Advertising Expenditures (z11)		-5,21E-08 **
TV (local) Advertising Expenditures (z12)		1,49E-06 ***
Human Resources Expenditures / Assets (x2/y4)		9,14E+01
Marketing Expenditures / Assets (x7/y4)	-4,65E+02 ***	-1,36E+03 ***
* significant at 10%		
** significant at 5%		
*** significant at 1%		

As it's seen in Table 7.12, the marketing expenditure growth has a positive impact on the brand equity in the long run, and it does not have any significant impact in the short run. However, the results highlight that there is a negative relationship between the ratio of the marketing expenditures to the assets and the customer-based brand equity of the bank both in the short term and in the long term. This result can be interpreted that the growth of the marketing expenditures versus the year before should be done in line with the growth of the assets. Or, the assets should grow more than the marketing expenditures. In addition, according to the results, the growth of the human resources expenditures has a negative effect in the long term and does not have any significant effect in the short term.

In terms of the pricing mark-up variable, the results demonstrate that there is not any significant relationship between brand equity and the pricing indicators. The reason behind, why the pricing mark-up variable is not found significant in terms of the impact on the customer-based brand equity, is the absence of the tangible products supplied by the banks. As the banks offer only service, the customers might not relate the pricing mark-up with any of the quality perception of the bank's products. As a result, the pricing mark-up variable could not be found significant.

There are three significant indicators for the distribution intensity in terms of the impact on the brand equity. These indicators are as follows; the number of branches, the number of the ATMs, and the number of the personnel. The results display that the

number of branches and the number of the ATMS have a positive impact on the brand equity both in the short run and in the long run. This result confirms that the number of the branches and the ATMs can increase the brand awareness of the banks. In addition, due to the wide coverage of the ATMs, the customers might come up more with the ATMs of a bank, so they get more aware of that bank. Additionally, the bank customers feel more comfortable with the bank based on the ease of the accessibility which creates positive outcomes in the brand equity. In addition, the ATMs make the bank services more tangible and increase their observability. Hence, the customers of different banks can observe the customers of the related bank using the ATMS. However, it's important to note that, there is a negative relationship between the number of the personnel and the brand equity both in the short run and in the long run. The reason behind the negative relationship might be that this study could not make a separation between the marketing related bank personnel and the other personnel in the other different departments. Hence, the number of the personnel directly related to the marketing activities could not be defined.

In terms of the impact of the advertising intensity, all the media except for TV advertising on the national channels have been found significant on the customer-based brand equity. According to the results, the local TV advertising has a positive impact on the brand equity in the long term, while it does not have any impact in the short term. The results show that the radio advertising, outdoor, and internet advertising influence the customer-based brand equity negatively in the long run, and they do not produce any significant effect in the short run. Based on the results, the print media and cinema advertising have positive effects on the brand equity both in the short term and the long term. Hence, based on the analysis to define the effective advertising media on the customer-based brand equity, it can be concluded that some media tools are more effective than the others. However, these results need a further detailed analysis in order to define the reasons behind the changing impacts of the media tools on the customer-based brand equity of the banks. In addition, the assumption was that the resources and the marketing activities have both direct and indirect impacts on the business performance, where the indirect impact occurs through the customer-based brand equity. Thus, based on the results, it is confirmed the customer-based brand equity plays a mediating role in the indirect relationship

between the resources, marketing activities and the business performance as indicated in the proposed model.

As discussed, the proposed model employed more than one dependent variables. This is because every dependent variable shows a different dimension of the business performance. Hence, with such a comprehensive approach, the business performance is examined from different perspectives. Table 7.13 provides a summary of the relationships between the variables. The column of net profit growth is generated from Table 7.4, the column of the ratio of net profit to the assets is generated from Table 7.6, the column of deposit volume growth is generated from Table 7.8, the column of churn rate is generated from Table 7.10 and the column of customer-based brand equity is generated from Table 7.12.

Table 7.13 : Short-term and long-term relationships of the variables.

		Dependent Variables								Mediating Variable	
		Net Profit Growth		Net Profit / Assets		Deposit Volume Growth		Churn Rate		Customer-Based Brand Equity	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Marketing Resources	Growth of Marketing Expenditures	—	—	N/A	—	—	N/A	N/A	N/A	N/A	+
	Growth of Human Resources Expenditures	N/A	N/A	N/A	N/A	N/A	N/A	N/A	+	N/A	—
	Marketing Expenditures / Total Bank Expenditures	N/A	—	N/A	—	+	+	—	—	N/A	N/A
	Human Resources Expenditures / Total Bank Expenditures	—	N/A	N/A	N/A	—	N/A	—	—	N/A	N/A
	Marketing Expenditures / Assets	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—	—
	Human Resources Expenditures / Assets	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Independent Variables	Pricing Mark-Up	+	+	+	+	—	—	+	+	N/A	N/A
	Number of Branches	+	+	+	+	+	+	N/A	N/A	+	+
	Number of ATMs	N/A	N/A	—	—	N/A	N/A	N/A	N/A	+	+
	Number of Personnel	—	—	N/A	N/A	N/A	N/A	+	+	—	—
	TV (national) Advertising Expenditures	—	—	N/A	N/A	N/A	N/A	N/A	—	N/A	N/A
	Radio Advertising Expenditures	N/A	+	N/A	N/A	N/A	N/A	N/A	—	N/A	—
	Print Advertising Expenditures	—	—	—	—	N/A	+	—	—	+	+
	Internet Advertising Expenditures	N/A	+	+	+	—	N/A	N/A	N/A	N/A	—
	Cinema Advertising Expenditures	+	+	+	+	—	+	—	+	+	+
	Outdoor Advertising Expenditures	N/A	+	+	+	+	N/A	+	N/A	N/A	—
	TV (local) Advertising Expenditures	+	—	N/A	—	N/A	N/A	N/A	+	N/A	+
Mediating Variable	Customer-Based Brand Equity	+	+	+	+	+	+	N/A	—	N/A	N/A

7.4 Results

As discussed above, the analyses include marketing resources and marketing activities as independent variables to investigate their impact on the business performance. Additionally, customer-based brand equity variable is also included in the analyses to determine its direct impact on the business performance and to examine its mediating effect on the relationship between marketing resources, marketing activities and the business performance.

The study searched the answers of seven research questions. RQ1 is “is there any short-term (long-term) effect of human resources intensity (measured by the growth of

human resources expenditures (x_4 , x_5), the ratio of human resources expenditures to the total bank expenditures (x_1/x_{16} , x_2/x_{17}), and the ratio of human resources expenditures to the assets (x_2/y_4) on the customer-based brand equity?” Examining the relationships between growth of human resources expenditures, the ratio of human resources expenditures to the total bank expenditures, the ratio of human resources expenditures to the assets and customer-based brand equity presented in Table 7.13, there is not any short-term effect of human resources intensity on the customer-based brand equity, however there is long-term effect of the human resources intensity on the customer-based brand equity.

RQ2 is “is there any short-term (long-term) effect of human resources intensity (measured by the growth of human resources expenditures (x_4 , x_5), the ratio of human resources expenditures to the total bank expenditures (x_1/x_{16} , x_2/x_{17}), and the ratio of human resources expenditures to the assets(x_2/y_4)) on the business performance (measured by net profit growth (y_{11}), the ratio of the net profit to the assets (y_2/y_4), the growth of the deposit volume (y_{61}), and the churn rate (y_7))?” Table 7.13 shows the relationships between the growth of human resources expenditures, the ratio of human resources expenditures to the total bank expenditures, the ratio of human resources expenditures to the assets and business performance. According to Table 7.13, there are short-term and long-term effects of human resources intensity on the business performance.

RQ3 is “is there any short-term (long-term) effect of financial resources intensity (measured by the growth of marketing expenditures (x_9 , x_{10}), the ratio of marketing expenditures to the total bank expenditures (x_6/x_{16} , x_7/x_{17}), and the ratio of marketing expenditures to the assets (x_7/y_4)) on the customer-based brand equity?” Table 7.13 indicates the relationships between the growth of marketing expenditures, the ratio of marketing expenditures to the total bank expenditures, the ratio of marketing expenditures to the assets and the customer-based brand equity. Based on Table 7.13, there are short-term and long-term effects of financial resources intensity on the customer-based brand equity.

RQ4 is “is there any short-term (long-term) effect of financial resources intensity (measured by the growth of marketing expenditures (x_9 , x_{10}), the ratio of marketing expenditures to the total bank expenditures (x_6/x_{16} , x_7/x_{17}), and the ratio of marketing expenditures to the assets (x_7/y_4)) on the business performance (measured

by net profit growth (y_{11}), the ratio of the net profit to the assets (y_2/y_4), the growth of the deposit volume (y_{61}), and the churn rate (y_7))?” As the relationships between growth of marketing expenditures, the ratio of marketing expenditures to the total bank expenditures, the ratio of marketing expenditures to the assets and business performance is shown in Table 7.13, there are short-term and long-term effects of financial resources intensity on the business performance.

RQ5 is “is there any short-term (long-term) effect of marketing activities (measured by the advertising intensity ($z_6, z_7, z_8, z_9, z_{10}, z_{11}, z_{12}$), the pricing mark-up (z_1-z_2), and the distribution intensity (z_3, z_4, z_5)) on the customer-based brand equity?” As Table 7.13 demonstrates the relationships between advertising intensity, pricing mark-up, distribution intensity and customer-based brand equity, there are short-term and long-term effects of marketing activities on the customer-based brand equity.

RQ6 is “is there any short-term (long-term) effect of marketing activities (measured by the advertising intensity ($z_6, z_7, z_8, z_9, z_{10}, z_{11}, z_{12}$), the pricing mark-up (z_1-z_2), and the distribution intensity (z_3, z_4, z_5)) on the business performance (measured by net profit growth (y_{11}), the ratio of the net profit to the assets (y_2/y_4), the growth of the deposit volume (y_{61}), and the churn rate(y_7))?” As Table 7.13 indicates the relationships between advertising intensity, pricing mark-up, distribution intensity and the business performance, there are short-term and long-term effects of marketing activities on the business performance.

RQ7, is “is there any short-term (long-term) effect of the customer-based brand equity on the business performance (measured by net profit growth (y_{11}), the ratio of the net profit to the assets (y_2/y_4), the growth of the deposit volume (y_{61}), and the churn rate (y_7))?” Examining the relationship between customer-based brand equity and the business performance presented in Table 7.13 indicates that there are short-term and long-term effects of customer-based brand equity on the business performance.

As mentioned, the analyses included two types of marketing resources, namely the financial resources related to the marketing activities and the human resources of the marketing and the support staff. Among these marketing resources, the financial aspects of the marketing resources are measured by the growth of the marketing expenditures, the growth of the human resources expenditures, the ratio of the marketing expenditures to the total bank expenditures, the ratio of human resources expenditures to the total bank expenditures, the ratio of the marketing expenditures to

the total assets, and by the ratio of human resources expenditures to the total assets. According to the results, the growth of the marketing expenditures has a negative impact on the net profit growth both in the short term and in the long term, the ratio of the net profits to the assets in the long run, and on the growth of the deposit volume in the short run, whereas it has a positive impact on the customer-based brand equity in the long term. As discussed, the effects of the independent variables are examined in two different time horizons; namely, short-term and long-term basis. The short-term period refers to around three months, and the long-term period refers to around two years. Clearly, the short-term period of three months is a very short period for any examination about any improvement of profitability. Even, the long-term period which is defined as around two years, is still cannot be accepted as satisfactorily long to observe the effects of marketing expenditures turning to marketing investment through the marketing activities on profit-based indicators and even the growth of the deposit volume. Undoubtedly, the rise in marketing budget diminishes the profit not only in three months, but also in a longer period. Therefore, the negative impact of the marketing expenditures on the net profit growth, on the ratio of the net profit to the assets, and on the deposit volume growth, is expected for a case of three months and also even for two years periods. In fact, the financial resources allocated for the marketing activities stay as expenditures as long as they could not turn into any benefit in terms of marketing success. However, it can be assumed that, the marketing expenditures turn into investments when they contribute to building the brand equity of the company. According to the results of this study, both the short-term and the long-term impact of the brand equity on the net profit growth, the ratio of the net profits to the assets, and on the deposit volume growth are positive. Therefore, it can be concluded that the marketing related financial resources pay off for the business success of a bank through the contribution of the brand equity. Moreover, the results confirm that the growth of the marketing expenditures has a positive impact on the brand equity. Therefore, it can be said that, the marketing expenditures should be regarded as long-term marketing investments which in turn serve to build brand equity of the company. Hence, the contribution of these investments needs longer time to display its positive influences on the profitability and on the improvement in the deposit volume.

In addition, the ratio of the marketing expenditures to the total bank expenditures is another resource which is examined in the study. The results indicate that, the ratio of the marketing expenditures to the total bank expenditures has a negative effect on the net profit growth in the long run, the ratio of the net profits to the assets in the long term, and on the churn rate both in the short run and in the long run, whereas it has a positive effect on the growth of the deposit volume both in the short term and in the long term. As discussed above, also the marketing expenditure growth has a negative impact on the net profit growth and on the ratio of the net profit to the assets. Hence, the results are in line with the net profit growth and with the ratio of the net profits to the assets from these two variables' perspectives. However, the ratio of the marketing expenditures to the total bank expenditures has an opposite effect on the deposit volume growth, when compared with the effect of the marketing expenditure growth on the deposit volume growth. Thus, these results indicate that, where the share of the marketing expenditures increases within the total bank expenditures, it creates a positive effect on the deposit volume growth. However, as mentioned, the short-term effect of the marketing expenditure growth on the deposit volume growth is negative. Hence, these two results together denote that, the increase of the marketing expenditures within the total bank expenditures should be made slowly, by spreading this increase out through the time. Otherwise, any quick increase above the optimum level might harm the effectiveness and will cause a negative impact on the deposit volume growth. However, the results confirm that the ratio of the marketing expenditures to the total bank expenditures has a negative impact on the churn rate, which means that the marketing efforts pay off in terms of the customer retention and make a decreasing impact on the churn rate.

The other resource indicators are related to the human resources expenditures. One is referring to the growth of human resources expenditures, and the other refers to the ratio of the human resources expenditures to the total bank expenditures. According to the results, the ratio of the of the human resources expenditures to the total bank expenditures has a negative influence on the net profit growth in the short term, the deposit volume growth in the short run, and on the churn rate both in the short term and in the long term. As discussed above, any significant increase based on the expenditures needs a longer period to show its positive impact on the profitability. This is also valid for the deposit volume growth. However, the effect of the ratio of

the human resources to the total bank expenditures is negative on the churn rate, which means that these expenditures pay off to retain the customers. It can be concluded that, where the profit impact of the human resource expenditure needs longer time, the influence on the customer retention comes even before.

Among the marketing activities, the impact of the advertising, pricing, and the impact of the distribution on the net profit growth is examined in the study. The results display that, there is a positive effect of the pricing mark-up on the net profit growth, the ratio of the net profit to the assets, and on the churn rate; whereas it has a negative influence on the deposit volume growth, all in the short run and in the long run. Any increase in the pricing mark-up means an increase in the prices of the bank services in terms of the customer loans and it refers to a decrease in the prices paid for the deposits of the customers. Hence, as the price gets higher, the net profit of the banks and also the ratio of the net profit to the assets increases accordingly. However, the higher the interest rates of the customer loans and the lower the interest rates applied for the deposits, the customers do not prefer to put their deposit to the related bank, which causes a decrease in the deposit volume growth. In the opposite case, when the increasing interest rates are applied for the deposits, they appeal to more customers which results in an increase of the deposit volume growth. In the same vein, where the pricing mark-up is high, the churn rate increases, because the customers look for different banks where they can increase their benefits. Hence, any increase in the interest rates of the customer loans, or vice versa, any decrease in the interest rates applied for the deposits will result in a loss of the customers. Thus, this result shows that the price is an important indicator for the selection of the banks from customer point of view. As mentioned, the impact of pricing is significant both in the short run and in the long run for each variable. Therefore, it can be concluded that that the pricing activities pay off quite quickly for the profitability improvements and show their impact with the same speed on the deposit volume and the churn rate.

There is different size of banks in the group of fourteen banks, which have substantial differences in terms of the number of branches, ATMs, and the number of personnel. Therefore, the logarithms of these values are assumed as a healthier comparison between these banks for the analyses related to the distribution intensity. As it is known, the logarithmic values enable to compare the very different sizes of the amounts. For this reason, three dimensions of the distribution intensity are measured through the

logarithmic values of the measures, as mentioned in the methodology chapter. The results show that the number of the branches has a positive effect on the net profit, the ratio of the net profit to the assets, the deposit volume growth, and on the customer-based brand equity, all in the short term and in the long term. The expectation would be that the technological improvements will lead to the negative impact of the number of branches on the net profit growth and the ratio of the net profit to the assets due to the increased level of the technological applications in the banking sector. Hence, if the bank directs its customers more to online applications and the ATMs, online banking activities and the ATMs enable the bank to have a drop in the costs of a branch. However, this result indicates that the Turkish customer still gives value to the traditional way of banking activities. The positive influence of the branches on the deposit volume growth and the customer-based brand equity can be an important outcome of this attitude of the Turkish customer. Of course, this result raises some questions such as whether the Turkish customer is more relation or convenient oriented in the banking. Another question would be that, whether due to the trust concerns, the customer wants to deal with the banking activities in the branches. In addition, there can be another reason for the positive impact of the number of branches on the deposit volume growth. The banks have private banking specialists in the branches for the retail banking customers as well as for the business banking customers. Hence, this result might be an outcome of the employed specialized account managers in the branches of the banks. Thus, the individual or the business customers might prefer a consultancy by the account managers before they put their deposits to the related bank accounts, which impacts the deposit volume in return. Thus, a cross-cultural analysis of the bank customers might help to answer these questions in a future research.

Whereas the number of the branches has significant impacts on most of the business indicators, the number of ATMs has an effect only on the deposit growth and the customer-based brand equity. The results demonstrate that the number of ATMs has a negative influence on the ratio of the net profit to the assets both in the short term and in the long term, whereas it has a positive impact on the customer-based brand equity both in the short run and in the long run. The ATMs provide a limited content of the banking transaction options. Hence, this result indicates that the limited content of the banking transactions provided by the ATMs, are not enough to create a positive improvement in the ratio of the net profit to the assets. On the other hand, the result

shows that the number of ATMs has a positive influence on the brand equity. Thus, this might be an outcome of the increased awareness of the chain of ATMs. As one of the dimensions of the customer-based brand equity is the brand awareness, the ATMs represent the most visible and tangible aspects of bank services, thus the customers can easily observe ATMs and the customers using the ATMs around them. For this reason, ATMs are already one of the most effective tools serving to facilitate the brand awareness. Therefore, a positive relationship is a natural outcome. Also, the accessibility concerns of the customers might lead the bank customers to feel more comfortable and create positive associations with the brand. Hence, this might be another reason for the positive relationship between the number of ATMs and the customer-based brand equity.

The last measure for the distribution intensity is the number of the personnel. The results display that the number of personnel has a negative impact on the net profit growth and the customer-based brand equity, in the short run and in the long run, whereas it has a positive effect on the churn rate both in the short term and long term. The negative effect of the number of the personnel on the net profit growth indicates that the number of the personnel does not make any contribution for an improvement of the net profit. However, the negative relationships with the customer-based brand equity and the positive relationship with churn rate cannot be explained very easily. There is a limitation of this study which might have distorted the results. Hence, the number of the personnel which is used in this study includes all the marketing and the support staff together. The banks are big financial enterprises, and therefore they employ many people in several different departments. This means that the number of the personnel included in this study also contains non-marketing personnel as well, which means all the staff together. However, a taxonomy would be very helpful to exactly define how much of these personnel is directly related to the marketing activities. This classification might lead to a different outlook of the relationships between the number of the personnel and the business performance indicators. Due to the unavailability of the data on the number of personnel based on the specialization for each bank in the study, this classification and related analysis could not be realized.

The last dimension of the marketing activities is the advertising intensity identifying how much the customer is exposed for each type of the media including the national television, radio, print media, internet, cinema, outdoor, and the local television.

The TV advertising is, of course, one of the most effective and commonly used advertising tools for the banks. This study considers two types of TV advertising in the analyses; TV advertising on the national channels and TV advertising on the local channels. According to the results, TV advertising on the national channels has a negative influence on the net profit growth both in the short run and in the long run and on the churn rate in the long term. The reason behind the negative effect of the TV advertising on the national channels can be the high costs of the TV advertisements on the national channels. Therefore, the short-term period of three months and even the long-term period of two years could still not be long enough to see the positive impact of this huge investment on the net profit growth. Additionally, the people have many choices in terms of channels on the TV, which enables them to zap from one channel to another channel during the advertisements, so that the visibility of the advertisements decreases by the customers. As a result, the customer who is not exposed enough to the TV advertisement, is not influenced enough by that brand. However, the TV advertising has a negative impact on the churn rate. This means that, even the profitability impact needs time to pay off, the TV advertisements enable the banks to retain their customers and decrease the churn rate earlier. Knowing that the TV advertising is the tool which has the most widespread coverage in terms of reaching the customers, the positive influence on the customer retention can be a natural outcome.

In addition to the national TV advertising, the local TV advertising is also included in the analysis. Based on the results, the local TV advertising has a negative effect both on the net profit growth and on the ratio of the net profit to the assets, in the long term. As mentioned above, TV advertising is, undoubtedly, one of the most effective ways to reach to the geographically dispersed customers. But, due to the high costs of the TV advertising, the profit impact of this type of advertisements turns to the positive direction in the longer horizon. Hence, the same case is also valid for the local TV advertising. The results also show that the TV advertising on the local channels has a positive impact on the churn rate and the brand equity in the long term. Of course, the positive relationship between the local TV advertising and the churn rate is quite surprising. The coverage and the customer accessibility of the local TV channels are quite limited; therefore, this outcome cannot be generalized. However, the national TV advertising has a substantially wider coverage when compared with the local TV

advertising. The influence of the national TV advertising on the churn rate is negative. Thus, due to the broader coverage and the higher effectiveness of the national TV advertising, it can be concluded that, in general TV advertising has a positive influence on the customer retention.

Another media used in the study is the radio advertising. According to the results, the radio advertising has a positive influence on the net profit growth in the long run, whereas it has a negative impact on the churn rate and the customer-based brand equity in the long term. Radio advertising is one of the tools having high accessibility to the bank customer. In addition, the cost of the radio advertisements is not in huge volumes. Therefore, the positive feedback of these advertisements for the net profit growth pays off earlier, especially when compared with the TV advertising. Additionally, due to the reason that the radio advertising has a wide coverage and high customer accessibility, this media tool has a big influence on the customers. As a result, the radio advertising decreases the churn rate and contributes to the customer retention.

The print media is the other media tool included in the study. The results indicate that the print media has a negative impact on the net profit growth, the ratio of the net profit to the assets, and on the churn rate, all in the short term and in the long term. This tool has a positive effect on the deposit volume growth in the long run and the brand equity both in the short term and in the long term. The case that the printed advertisements are not producing positive influence on the net profit growth and on the ratio of the net profit to the assets might be caused due to the shift of the customers from printed versions of the media to digital versions of the media. According to the statistics of the Turkish Statistical Institute (TUIK) about the printed media circulation, the circulation of the printed media decreased 7,6% from 2013 to 2014, 6,2% from 2014 to 2015, and 20,1% from 2015 to 2016 (TUIK, 2017). In addition, the newspapers and the magazines also display a decrease in terms of the numbers. Hence, the number of the newspapers and the magazines decreased 0,5% from 2013 to 2014, 4,5% from 2014 to 2015, and 7,9% from 2015 to 2016 (TUIK, 2017). Apparently, there is a constant decrease in the printed media in terms of the circulation and the number through the years. This leads to a decreased influence of the printed media and results in a negative impact of the printed media on the net profit growth and on the ratio of the net profit to the assets. However, the case that the printed advertisements are producing a positive impact on the deposit volume growth and on the customer-based brand equity,

and a negative impact on the churn rate might be caused due to the high level of the trust about the economic issues that the individual and the business customers have towards the printed media. In addition, from the customer-based brand equity perspective, the print media is also a source to increase the awareness and therefore is an effective tool for creating the customer-based brand equity. Hence, it can be said that the economy magazines and the newspapers might play a significant positive role in the deposit volume growth, in retaining the customer of the banks and creating the customer-based brand equity.

Another media tool is the internet advertising. According to the results, the internet advertising has a positive effect on the net profit growth in the long run and the ratio of the net profit to the assets both in the short term and in the long term. There are two main reasons for the positive impact. The first reason is that the internet advertising is increasing in a high speed. According to the statistics of Advertising Association of Turkey, there is a continuous increase in the digital media investments in Turkey. According to the statistics, the increase in the digital media investments from 2012 to 2013 is 17,5%, from 2013 to 2014 is 139,1%, from 2014 to 2015 is 25,5%, and the increase from 2015 to 2016 is 17% (Advertising Association, 2013, 2014, 2015, 2016, 2017). Therefore, the customers get more exposed to the internet advertisements, so that it creates a positive influence on the net profit growth and the ratio of the net profit to the assets. The second reason is that the active customer number is increasing in internet banking. According to the statistics of the Banks Association of Turkey, there were 10.551.764 internet customers in 2012, 12.435.952 internet customers in 2013, 14.315.056 internet customers in 2014, 17.420.451 internet customers in 2015, and there were 20.398.627 internet customers in 2016. These numbers demonstrate an increase in the customer numbers in the level of 17,9% from 2012 to 2013, 15,1% from 2013 to 2014, 21,7% from 2014 to 2015, and 17,1% from 2015 to 2016. Hence, as the number of the customer which is using the internet banking increases, they come up more frequently with the internet advertisements. As a result, the effectiveness of the internet advertisements increases accordingly. Hence, both reasons lead to the positive impact of the internet advertising on the net profit growth and on the ratio of the net profit to the assets. However, internet advertising has a negative impact on the deposit volume growth and the brand equity. This might be caused due to the negative perception of the internet advertisement pop-ups when someone is surfing on the

internet. Thus, these advertisements might, therefore, decrease the customer-based brand equity due to the negative associations created with the brand.

Another media which is commonly used by the banks is the cinema. Indeed, some banks make sponsorship agreements with the cinema halls where the customers of the relative banks enjoy a discount rate for some timelines of the cinema films. The cinema advertising affects the net profit growth, the ratio of the net profit to the assets, and the customer-based brand equity positively, all both in the short run and in the long run. Additionally, even the impact of the cinema advertising is negative on the deposit volume growth in the short term, it turns to positive in the long term. The reason behind the positive impact in the cinema advertising is the increase in the number of audiences. According to the statistics of TUIK, the number of the cinema audience was 39.002 in 2012, 45.078 in 2013, 55.379 in 2014, and 57.148 in 2015 (TUIK, 2016). As the number of the cinema audience increases through the years, so the exposure level of the cinema advertising increases. Consequently, the cinema advertisements create a positive influence on the business performance indicators. Additionally, the impact of cinema advertising is negative on the churn rate in the short term, but it turns to positive in the long term. Hence, this means that the beneficial impact of the cinema in terms of decreasing the churn rate lasts not long. Thus, this tool has a short-term benefit on the customer retention.

The last significant media included in this study is outdoor. Based on the results, the outdoor advertisements have a positive effect on the net profit growth in the long term, the ratio of net profit to the assets both in the short run and in the long run, and on the deposit volume growth in the short term. The banking sector is a service sector, and therefore intangible. But, the outdoor advertisements convert this intangible service outlook to a tangible outlook by the visuals used in the outdoor advertisements. Hence, the impact of the advertising on the consumer mind gets more effective. Additionally, with the technological improvements, there occurred many improvements in the materials of the outdoor panels. This makes these media more attractive from customer point of view. Thus, all these reasons result in the positive impact of the effective outdoor advertising. However, the outdoor advertising has a positive influence on the churn rate in the short run and a negative influence on the customer-based brand equity in the long run. This result shows that the outdoor advertising is not an effective tool for customer retention and for creating the customer-based brand equity for the banks.

The last variable, which is included in this study, is the customer-based brand equity. According to the results, the customer-based brand equity has a positive impact on the net profit growth, the ratio of the net profit to the assets, and on the deposit volume growth, all in the short run and in the long run, and a negative effect on the churn rate in the long term. Hence, in line with the marketing literature, it can be concluded that the brand equity is a very significant factor on the business performance of a company and contributes to the benefit of the company success. In addition to its direct impact on the business performance, the customer-based brand equity has a mediating role in the relationship of marketing resources, marketing activities and the business performance. As discussed in the chapter of linking marketing and business performance, the marketing activities primarily affect the consumer minds. Thus, the thoughts, the perceptions, and the feelings of the customers form the brand equity of the related brand. Just after that, based on the developed brand equity, the impact of the marketing activities can be seen on the business performance indicators. Hence, it can be concluded that the marketing efforts and marketing resources of the banks constitute a brand equity which ultimately positively affect the business performance of the banks. From this perspective, this study confirms that the developing the customer-based brand equity holds a big importance to gain a positive business result.

8. CONCLUSION AND SUGGESTIONS

8.1 Conclusion

This study aims to explain the relationship between marketing resources, marketing activities and the business performance through customer-based brand equity. From these points of view, this study focuses on the topic of marketing performance assessment. These relations are examined in two different time horizons: short-term period consisting of around three months and long-term period consisting of around two years where examination of different time periods results in different type of outcomes. Hence, several conclusions have been noted based on the analyses.

In general, the results indicate that there is impact of the marketing related factors indicated by marketing resources, marketing activities, customer-based brand equity on business performance. The impact of the marketing resources, marketing activities, and the customer-based brand equity change according to the length of the response period. Hence, there are differences in terms of the impacts of the marketing resources and the marketing activities on the business performance indicators and the customer-based brand equity in the short term and in the long term. These differences result in different implications for the banking sector.

According to the results, the impact either can change its direction, or it becomes significant or insignificant through the time. Hence, this outcome can be considered as an indication to define the timing of the return of an investment. The marketing resources and marketing activities can be treated as marketing investments. It is very important to know when the return of these investments is going to be obtained. Hence, this insight would increase the abilities of the management of the marketing strategy and the relative marketing budget. According to the results, the pricing mark-up, the number of branches, the cinema advertising, and the customer-based brand equity have positive impacts on the net profit growth both in the short term and in the long term. On the other hand; the number of personnel, the TV advertising on the national channels, the print advertising, and the growth of the marketing expenditures have

negative effects on the net profit growth both in the short run and in the long run. Other than these, the radio advertising, the internet advertising, and the outdoor advertising positively influence net profit growth only in the long-run, whereas the ratio of marketing expenditures to the total bank expenditures has a negative impact on the net profit growth only in the long run. Apart from them, the ratio of the human resources expenditures to the total bank expenditures has a negative short-term impact on the net profit growth, whereas the impact of the local TV advertising changes through the time, from positive to negative.

The results also indicate that, the effect of the pricing-mark up, the number of branches, the customer-based brand equity, the internet advertising, the cinema advertising, and the outdoor advertising is positive on the ratio of the net profit to the assets in the short run and in the long run; while the effect of the number of ATMs and the print advertising on the ratio of the net profit to the assets is negative, both in the short term and in the long term. Apart from them, the growth of marketing expenditures, the ratio of marketing expenditures to the total bank assets, and the TV advertising on the local channels have negative impacts on the ratio of the net profit to the assets only in the long term.

In addition; when the impacts on the growth of the deposit volume are examined, it can be concluded that, the ratio of the marketing expenditures to the total bank expenditures, the number of branches, and the customer-based brand equity affect positively both in the short run and in the long run, whereas the impact of the pricing mark-up is negative in both periods. Additionally, the print advertising has a positive influence on the deposit volume growth only in the long term, while the impact of the outdoor advertising occurs positively only in the short term. In addition, the growth of marketing expenditures, the ratio of human resources to the total bank expenditures, and the internet advertising have negative impact on the deposit volume growth only in the short run. Only cinema advertising changes the direction of its impact on the growth of the deposit volume through the time. Thus, the cinema advertising has a negative effect in the short term and a positive impact in the long term.

Examining the impacts on the churn rate indicates that, the pricing mark-up and the number of personnel have positive impacts on the churn rate both in the short run and in the long run. However; the ratio of marketing expenditures to the total bank expenditures, the ratio of human resources expenditures to the total bank expenditures,

and the print advertising have a negative influence on the churn rate both in the short term and in the long term. Apart from them, the TV advertising on the national channels, the radio advertising, and the customer-based brand equity have negative impacts on the churn rate only in the long run, whereas the growth of the human resources expenditures and the TV advertising on the local channels have positive impacts only in the long term. On the other hand, outdoor advertising has a positive influence on the churn rate only in the short term, while cinema advertising changes its impact from negative to positive through the time.

Regarding the customer-based brand equity, the number of branches, the number of ATMs, the print advertising, and the cinema advertising have positive impacts both in the short run and in the long run, where the ratio of the marketing expenditures to the assets and the number of personnel affect the customer-based brand equity negatively both in the short term and in the long term. In addition, the growth of the marketing expenditures and the TV advertising on the local channels have positive impacts on the customer-based brand equity only in the long run, while the growth of the human resources, the radio advertising, and the outdoor advertising demonstrate negative effects on the customer-based brand equity in the long term.

To sum up, it can be concluded that the customer-based brand equity is one of the most effective indicators having an impact on all the business performance indicators. This result indicates that the indicators capturing the perceptions of the customers such as customer-based brand equity need to be integrated to the models where the impacts of the other indicators on the business performance is examined. This result also confirms that the companies need to make investments to increase their brand equity. Hence, the impact of the customer-based brand equity is in the positive direction on the net profit growth, on the ratio of the net profits to the assets, and on the deposit volume growth, whereas it has a negative impact on the churn rate. Thus, the customer-based brand equity is a very important asset for a company.

The results also highlight that the pricing mark-up is another most effective indicator on the business performance indicators in the banking industry. This outcome indicates that the price is one of the important parameters playing a significant role in the performance of the banks. In addition, the positive impact of the pricing mark-up on the churn rate demonstrates that the pricing strategy is also an important parameter for

the customers regarding the decision to leave a bank, or not. Therefore, the banks need to arrange their pricing policies also taking the consumer churn rate into consideration.

Another significant parameter is the number of branches. According to the results, the number of branches has a positive impact almost on all the performance indicators; namely, the net profit growth, the ratio of the net profit to the assets, the growth of the deposit volume, and the customer-based brand equity. This result is a bit surprising since, with the technological improvements in the banking industry leading to the establishment of the mobile and internet banking systems, the impact of the branches would be expected in a low level. However, this result indicates that the preference of the Turkish customer is still indicating the usage of the bank branches. Hence, it can be concluded that the customer might still feel more comfortable in the bank branches, and banks might respond to this reaction by going on to open new branches or at least keep the current ones. The first reason might be due to the trust concerns in the online and mobile application, the bank branches might have been still preferred by the customers. Especially, for the case of the older customer groups, the online and mobile applications might be perceived more difficult. The second reason might be the private banking specialists which are employed to give advices to the customers of the banks. As these people are located in the bank branches, the customers might prefer to visit the bank branches in order to meet with these specialists.

The other highlight regarding the results is that the impact of the personnel number. The results show that the number of the personnel has negative impact on the net profit growth and the customer-based brand equity, whereas it has a positive impact on the churn rate. These relationships are all in the opposite direction of the expected results and cannot be explained easily. The reason for this unexpected outcome can be the data which has been used for the number of the personnel data. This data includes not only the marketing related personnel, but also it contains the support personnel in addition to the marketing related personnel. This reason might have distorted the results of the analyses in terms of the impact of the number of personnel.

The results of this study demonstrate the impact of the different marketing mix tools with a detail of the different media of the advertising. The companies have limited marketing budgets which need to be managed with a high proficiency in order to get the most profitable benefits. Therefore, the companies need to make the selection of the marketing mix elements based on the facts, with the knowledge of the potential

impacts on their business performance indicators as well as on their brand value. Thus, this study highlights the most effective marketing activities on the business performance of the banks. In addition, it identifies periods in which the positive or negative returns of these marketing activities are obtained. Therefore, the return on the investments made for these marketing mix elements can be examined before the investment has been done. This will lead to superior management of the marketing budget. Most importantly, this kind of a perspective enables the marketers to create the right portfolio in terms of the marketing mix elements. Thus, this enables the company to define the right marketing strategy which would lead to the success of the brand. Moreover, the determination of the most effective advertising media is a precious knowledge to constitute the marketing strategy. Since, it is very important that the media selection would serve to the improvement of the business performance indicators and the brand value through improving brand equity. While the impacts of the advertising media are changing from one business indicator to another, it would not be wrong to conclude that the cinema advertising is one of the most effective tools in terms of the all business performance indicators used in this study and the customer-based brand equity in the banking sector. Hence, examining specifically one of the business performance indicators would help for the banks to determine the most effective and beneficial advertising tools for the specific targets of the defined business performance indicators. Hence, the advertising media could be selected according to the specifically defined targets.

8.2 Managerial Implications

This study provides a comprehensive perspective to the development, execution, and management of the marketing strategy. With these aspects, this study will contribute to the marketing professional in terms of determining the right strategy for their marketing resources and marketing activities, developing customer-based brand equity, and improving the business performance indicators in the banking industry. The development of the marketing strategy will be done by determining the most effective marketing resources and marketing activities which can be defined based on their impacts on the customer-based brand equity and the business performance indicators. Additionally, the advertising activities can be managed by determining the most effective media tools producing the targeted outcomes.

In addition to the development of the right marketing strategy in the banking sector, this study will also contribute to the management of the marketing budget. By highlighting the most effective marketing mix elements and the media tools, this study will help the marketing professionals to correctly allocate the marketing budget according to the targeted performance indicators. In addition, with the short-term and long-term approach, this study will determine the response time of the related marketing activities. This point is another important contribution, by being another important guideline to the effective usage of the marketing budget.

Moreover, this study provided an important contribution by showing how marketing can be accountable. With such models, the accountability of marketing can be strengthened through extensive examinations related to the relationship between the marketing related factors and the business performance.

The model proposed in the study is applied for the banking sector with a metric selection based on control theory. However, this should not be necessarily taken as a limitation. With the same perspective, the model can be applied to other financial services industries. To do that, the metrics could be adjusted by determining the metrics based on the related sector or adopting a different theory for metric selection.

8.3 Limitations of the Study

There are important limitations of this study. The first limitation of this study is the limited number of the marketing resources used in the analyses. Knowing that there are other effective marketing capabilities such as CRM capabilities, R&D capabilities, market research capabilities, and the new product development capabilities which are mentioned in the methodology chapter, these resources and capabilities could not be included in the content of this study due to the unavailability of the related data. Hence, the inclusion of these parameters would have changed and enriched the insights of the study. In addition, the marketing resources included in the study are not holding inimitability characteristics. Inclusion of imperfectly imitable resources and capabilities in the model would have changed the results regarding the impact of these factors on the business performance. However, as mentioned before, the banks could provide a limited data on the marketing resources and capabilities which do not include such type of capabilities.

Another limitation is that the number of the personnel directly related with marketing activities could not be defined due to the different organizational structures of the banks. As a result, the staff which are not directly related with the marketing activities are also considered when determining the number of the personnel for the analyses. This is also valid for the human resources expenditures data. As mentioned in the discussion chapter, this limitation could have distorted some of the results related to this distinction. Therefore, this created another limitation for the study.

In addition, the data obtained from the public reports of the Banks Association of Turkey contains the data referring to both the individual and the corporate customers. However, the data obtained to constitute the customer-based brand equity contains only the data referring to individual customers. Hence, this constituted a limitation for the study.

The last limitation is that the data used in this study covers only a period of 4 years. Being this length of period is still long enough for a panel study, the extension of the length of the period would enable to conduct some additional studies which would shed light on the individual bank examinations. Hence, some of the examinations for the individual banks could not be processed which require a richer data in terms of the length of the period.

8.4 Future Research Directions

As mentioned in the limitations of the study, there are various resources and capabilities other than the ones which are used in this study. Hence, a future research can include different marketing resources. This study would help to determine the impact of other effective resources. A further study can be conducted in another financial services industry. With the same perspective, the resources, capabilities, and the business performance indicators could be defined, and the same model could be applied to observe the differing relationships between the marketing resources, marketing activities and the business performance, with the addition of customer-based brand equity. Additionally, this study examines the banking sector in Turkey, and the consumer surveys are conducted with Turkish customers. Hence, a further study could be conducted in a different country. This study would highlight the differences in the dynamics of the banking sector in different countries as well as the changing preferences of the customers from country to country. In addition, another

complementary study could include data of a longer period. This study could enable some additional examinations. These examinations could shed light on the relationships of the marketing resources, marketing activities and the business performance for an individual bank. This study might demonstrate the different dynamics of different banks in terms of the relationship of the marketing and business performance. In addition, the difference in terms of the customer preferences of different banks could be determined with such a study. Finally, more business performance metrics can be employed in this model. Extending the scope of the business performance metrics in terms of the financial and market-based metrics would provide a broader output of the model with more comprehensive conclusions. Hence, this model provides a broad perspective for the assessment of the marketing performance in banking as a significant service industry. Hence, adjusting and enriching the same perspective are possible with the determination of the appropriate marketing resources, marketing metrics, and the length of the examination periods.

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APPENDICES

APPENDIX A: Label of Variables

APPENDIX B: Wald Tests



APPENDIX A

Table A.1 : Label of variables.

Variable	Variable Name
x1	Human Resources Expenditures (million TL)
x2	Human Resources Expenditures (quarter based, million TL)
x4	Growth of Human Resources Expenditures vs. Previous Year (%)
x5	Growth of Human Resources Expenditures vs. Previous Year (quarter based, %)
x6	Marketing Expenditures (million TL)
x7	Marketing Expenditures (quarter based, million TL)
x9	Growth of Marketing Expenditures vs. Previous Year (%)
x10	Growth of Marketing Expenditures vs. Previous Year (quarter based, %)
x16	Total Bank Expenditures (million TL)
x17	Total Bank Expenditures (quarter based, million TL)
y2	Net Profit (quarter based, million TL)
y11	Growth of Net Profit vs. Previous Year (%)
y4	Assets (million TL)
y61	Growth of Deposit Volume vs. Previous Year (%)
y7	Churn Rate (%)
z1	Interest rate of the Customer Loans (%)
z2	Interest rate of the Deposits (%)
z3	Number of ATM
z4	Number of Branch
z5	Number of Personnel
z6	Expenditures of National Television Advertising (TL)
z7	Expenditures of Radio Advertising (TL)
z8	Expenditures of Print Advertising (TL)
z9	Expenditures of Internet Advertising (TL)
z10	Expenditures of Cinema Advertising (TL)
z11	Expenditures of Outdoor Advertising (TL)
z12	Expenditures of Local Television Advertising (TL)
L	Logarithm
(-1)	One period lag
(-2)	Two periods lag
(-3)	Three periods lag
(-4)	Four periods lag

APPENDIX B

Table B.1 : Wald test of the equation of net profit growth.

Estimation Equation:			
$Y11 = C(1) + C(2)*Y11(-1) + C(3)*Y11(-3) + C(4)*BRANDEQUITY + C(5)*BRANDEQUITY(-4) + C(6)*X9 + C(7)*X9(-4) + C(8)*(Z1-Z2) + C(9)*LZ4 + C(10)*LZ5 + C(11)*Z6 + C(12)*Z7(-1) + C(13)*Z7(-2) + C(14)*Z7(-4) + C(15)*Z8 + C(16)*Z8(-1) + C(17)*Z8(-2) + C(18)*Z8(-3) + C(19)*Z9(-2) + C(20)*Z9(-3) + C(21)*Z10 + C(22)*Z11(-3) + C(23)*Z11(-4) + C(24)*Z12 + C(25)*Z12(-1) + C(26)*Z12(-3) + C(27)*X1/X16 + C(28)*X1(-1)/X16(-1) + C(29)*X6(-3)/X16(-3) + C(30)*X6(-4)/X16(-4) + [CX=F,ESTSMPL="2013Q1 2015Q4"]$			
Brandequity			
Test Statistic	Value	df	Probability
t-statistic	4,413275	125	0
F-statistic	19,47699	(1, 125)	0
Chi-square	19,47699	1	0
Null Hypothesis: $(C(4)+C(5))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(4) + C(5)) / (1 - C(2) - C(3))$	0,736465	0,166875	
X9			
Test Statistic	Value	df	Probability
t-statistic	-3,34348	125	0,0011
F-statistic	11,17887	(1, 125)	0,0011
Chi-square	11,17887	1	0,0008
Null Hypothesis: $(C(6)+C(7))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(6) + C(7)) / (1 - C(2) - C(3))$	-0,27	0,080754	
Z1-Z2			
Test Statistic	Value	df	Probability
t-statistic	4,455184	125	0
F-statistic	19,84867	(1, 125)	0
Chi-square	19,84867	1	0
Null Hypothesis: $(C(8))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(8) / (1 - C(2) - C(3))$	0,136326	0,030599	
LZ4			
Test Statistic	Value	df	Probability
t-statistic	2,183738	125	0,0308
F-statistic	4,768712	(1, 125)	0,0308
Chi-square	4,768712	1	0,029
Null Hypothesis: $(C(9))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(9) / (1 - C(2) - C(3))$	2,556256	1,170587	
LZ5			
Test Statistic	Value	df	Probability
t-statistic	-2,65842	125	0,0089
F-statistic	7,06722	(1, 125)	0,0089
Chi-square	7,06722	1	0,0079
Null Hypothesis: $(C(10))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(10) / (1 - C(2) - C(3))$	-1,3891	0,522529	

Table B.1 (continued) : Wald test of the equation of net profit growth.

Z6			
Test Statistic	Value	df	Probability
t-statistic	-2,05211	125	0,0422
F-statistic	4,211145	(1, 125)	0,0422
Chi-square	4,211145	1	0,0402
Null Hypothesis: $(C(11))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(11) / (1 - C(2) - C(3))$	-7,07E-10	3,44E-10	
Z7			
Test Statistic	Value	df	Probability
t-statistic	3,689692	125	0,0003
F-statistic	13,61383	(1, 125)	0,0003
Chi-square	13,61383	1	0,0002
Null Hypothesis: $(C(12)+C(13)+C(14))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(12) + C(13) + C(14)) / (1 - C(2) - C(3))$	4,05E-07	1,10E-07	
Z8			
Test Statistic	Value	df	Probability
t-statistic	-4,17696	125	0,0001
F-statistic	17,44698	(1, 125)	0,0001
Chi-square	17,44698	1	0
Null Hypothesis: $(C(15)+C(16)+C(17)+C(18))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(15) + C(16) + C(17) + C(18)) / (1 - C(2) - C(3))$	-1,82E-07	4,35E-08	
Z9			
Test Statistic	Value	df	Probability
t-statistic	4,596878	125	0
F-statistic	21,13129	(1, 125)	0
Chi-square	21,13129	1	0
Null Hypothesis: $(C(19)+C(20))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(19) + C(20)) / (1 - C(2) - C(3))$	2,95E-07	6,42E-08	
Z10			
Test Statistic	Value	df	Probability
t-statistic	2,419319	125	0,017
F-statistic	5,853105	(1, 125)	0,017
Chi-square	5,853105	1	0,0155
Null Hypothesis: $(C(21))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(21) / (1 - C(2) - C(3))$	4,10E-08	1,70E-08	
Z11			
Test Statistic	Value	df	Probability
t-statistic	5,572701	125	0
F-statistic	31,055	(1, 125)	0
Chi-square	31,055	1	0
Null Hypothesis: $(C(22)+C(23))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(22) + C(23)) / (1 - C(2) - C(3))$	4,27E-07	7,66E-08	

Table B.1 (continued) : Wald test of the equation of net profit growth.

Z12			
Test Statistic	Value	df	Probability
t-statistic	-3,39574	125	0,0009
F-statistic	11,53106	(1, 125)	0,0009
Chi-square	11,53106	1	0,0007
Null Hypothesis: $(C(24)+C(25)+C(26))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(24) + C(25) + C(26)) / (1 - C(2) - C(3))$	-3,57E-06	1,05E-06	
X1/X16			
Test Statistic	Value	df	Probability
t-statistic	0,572312	125	0,5681
F-statistic	0,327541	(1, 125)	0,5681
Chi-square	0,327541	1	0,5671
Null Hypothesis: $(C(27)+C(28))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(27) + C(28)) / (1 - C(2) - C(3))$	0,7895	1,379493	
X6/X16			
Test Statistic	Value	df	Probability
t-statistic	-5,10246	125	0
F-statistic	26,03507	(1, 125)	0
Chi-square	26,03507	1	0
Null Hypothesis: $(C(29)+C(30))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(29) + C(30)) / (1 - C(2) - C(3))$	-19,6558	3,852221	
Delta method computed using analytic derivatives.			

Table B.2 : Wald Test of the equation of net profit / assets.**Estimation Equation:**

$Y2/Y4 = C(1) + C(2)*Y2(-4)/Y4(-4) + C(3)*BRANDEQUITY + C(4)*X5(-2) + C(5)*X5(-4) + C(6)*X10(-1) + C(7)*(Z1-Z2) + C(8)*LZ3 + C(9)*LZ4 + C(10)*Z6(-2) + C(11)*Z6(-4) + C(12)*Z7(-1) + C(13)*Z7(-3) + C(14)*Z8 + C(15)*Z8(-1) + C(16)*Z8(-4) + C(17)*Z9 + C(18)*Z9(-1) + C(19)*Z9(-3) + C(20)*Z9(-4) + C(21)*Z10 + C(22)*Z11 + C(23)*Z12(-1) + C(24)*Z12(-4) + C(25)*X7(-3)/X17(-3) + C(26)*X7(-4)/X17(-4) + [CX=F, ESTSMPL="2013Q1 2015Q4"]$

Brandequity

Test Statistic	Value	df	Probability
t-statistic	2,080389	129	0,0395
F-statistic	4,328017	(1, 129)	0,0395
Chi-square	4,328017	1	0,0375
Null Hypothesis: $(C(3))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(3) / (1 - C(2))$	0,000834	0,000401	

X5

Test Statistic	Value	df	Probability
t-statistic	-0,13565	129	0,8923
F-statistic	0,018399	(1, 129)	0,8923
Chi-square	0,018399	1	0,8921
Null Hypothesis: $(C(4)+C(5))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(4) + C(5)) / (1 - C(2))$	-0,000104	0,000769	

Table B.2 (continued) : Wald Test of the equation of net profit / assets.

X10			
Test Statistic	Value	df	Probability
t-statistic	-3,63835	129	0,0004
F-statistic	13,23756	(1, 129)	0,0004
Chi-square	13,23756	1	0,0003
Null Hypothesis: $(C(6))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(6) / (1 - C(2))$	-0,00028	7,71E-05	
Z1-Z2			
Test Statistic	Value	df	Probability
t-statistic	2,593574	129	0,0106
F-statistic	6,726625	(1, 129)	0,0106
Chi-square	6,726625	1	0,0095
Null Hypothesis: $(C(7))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(7) / (1 - C(2))$	0,000191	7,38E-05	
LZ3			
Test Statistic	Value	df	Probability
t-statistic	-4,82912	129	0
F-statistic	23,32043	(1, 129)	0
Chi-square	23,32043	1	0
Null Hypothesis: $(C(8))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(8) / (1 - C(2))$	-0,007742	0,001603	
LZ4			
Test Statistic	Value	df	Probability
t-statistic	2,201869	129	0,0295
F-statistic	4,848228	(1, 129)	0,0295
Chi-square	4,848228	1	0,0277
Null Hypothesis: $(C(9))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(9) / (1 - C(2))$	0,007678	0,003487	
Z6			
Test Statistic	Value	df	Probability
t-statistic	-1,25697	129	0,211
F-statistic	1,579977	(1, 129)	0,211
Chi-square	1,579977	1	0,2088
Null Hypothesis: $(C(10)+C(11))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(10) + C(11)) / (1 - C(2))$	-8,51E-13	6,77E-13	
Z7			
Test Statistic	Value	df	Probability
t-statistic	0,672098	129	0,5027
F-statistic	0,451716	(1, 129)	0,5027
Chi-square	0,451716	1	0,5015
Null Hypothesis: $(C(12)+C(13))/(1-C(2))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(12) + C(13)) / (1 - C(2))$	2,28E-10	3,40E-10	

Table B.2 (continued) : Wald Test of the equation of net profit / assets.

Z8			
Test Statistic	Value	df	Probability
t-statistic	-2,81131	129	0,0057
F-statistic	7,903465	(1, 129)	0,0057
Chi-square	7,903465	1	0,0049
Null Hypothesis: (C(14)+C(15)+C(16))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(14) + C(15) + C(16)) / (1 - C(2))	-2,25E-10	7,99E-11	
Z9			
Test Statistic	Value	df	Probability
t-statistic	4,081327	129	0,0001
F-statistic	16,65723	(1, 129)	0,0001
Chi-square	16,65723	1	0
Null Hypothesis: (C(17)+C(18)+C(19)+C(20))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(17) + C(18) + C(19) + C(20)) / (1 - C(2))	1,20E-09	2,93E-10	
Z10			
Test Statistic	Value	df	Probability
t-statistic	2,629247	129	0,0096
F-statistic	6,91294	(1, 129)	0,0096
Chi-square	6,91294	1	0,0086
Null Hypothesis: (C(21))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(21) / (1 - C(2))	1,52E-10	5,77E-11	
Z11			
Test Statistic	Value	df	Probability
t-statistic	2,618201	129	0,0099
F-statistic	6,854978	(1, 129)	0,0099
Chi-square	6,854978	1	0,0088
Null Hypothesis: (C(22))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(22) / (1 - C(2))	3,64E-10	1,39E-10	
Z12			
Test Statistic	Value	df	Probability
t-statistic	-3,03464	129	0,0029
F-statistic	9,209041	(1, 129)	0,0029
Chi-square	9,209041	1	0,0024
Null Hypothesis: (C(23)+C(24))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(23) + C(24)) / (1 - C(2))	-1,36E-08	4,49E-09	
X7/X17			
Test Statistic	Value	df	Probability
t-statistic	-4,30778	129	0
F-statistic	18,55695	(1, 129)	0
Chi-square	18,55695	1	0
Null Hypothesis: (C(25)+C(26))/(1-C(2))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(25) + C(26)) / (1 - C(2))	-0,039774	0,009233	
Delta method computed using analytic derivatives.			

Table B.3 : Wald test of the equation of deposit growth.

Estimation Equation:			
$Y61 = C(1) + C(2)*Y61(-1) + C(3)*Y61(-4) + C(4)*BRANDEQUITY + C(5)*X4(-1) + C(6)*X4(-2) + C(7)*X4(-4) + C(8)*X9 + C(9)*X9(-2) + C(10)*X9(-4) + C(11)*(Z1-Z2) + C(12)*LZ4 + C(13)*Z6(-2) + C(14)*Z6(-4) + C(15)*Z8(-1) + C(16)*Z9 + C(17)*Z9(-4) + C(18)*Z10 + C(19)*Z10(-1) + C(20)*Z11 + C(21)*Z11(-3) + C(22)*Z12(-4) + C(23)*X1/X16 + C(24)*X1(-1)/X16(-1) + C(25)*X1(-4)/X16(-4) + C(26)*X6/X16 + C(27)*X6(-1)/X16(-1) + C(28)*X6(-2)/X16(-2) + C(29)*X6(-3)/X16(-3) + C(30)*X6(-4)/X16(-4) + [CX=F,ESTSMPL="2013Q1 2015Q4"]$			
Brandequity			
Test Statistic	Value	df	Probability
t-statistic	1,782806	125	0,077
F-statistic	3,178396	(1, 125)	0,077
Chi-square	3,178396	1	0,0746
Null Hypothesis: $(C(4))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(4) / (1 - C(2) - C(3))$	0,028782	0,016144	
X4			
Test Statistic	Value	df	Probability
t-statistic	0,042045	125	0,9665
F-statistic	0,001768	(1, 125)	0,9665
Chi-square	0,001768	1	0,9665
Null Hypothesis: $(C(5)+C(6)+C(7))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(5) + C(6) + C(7)) / (1 - C(2) - C(3))$	0,003143	0,074741	
X9			
Test Statistic	Value	df	Probability
t-statistic	-1,465531	125	0,1453
F-statistic	2,147782	(1, 125)	0,1453
Chi-square	2,147782	1	0,1428
Null Hypothesis: $(C(8)+C(9)+C(10))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(8) + C(9) + C(10)) / (1 - C(2) - C(3))$	-0,019581	0,013361	
Z1-Z2			
Test Statistic	Value	df	Probability
t-statistic	-3,727344	125	0,0003
F-statistic	13,89309	(1, 125)	0,0003
Chi-square	13,89309	1	0,0002
Null Hypothesis: $(C(11))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(11) / (1 - C(2) - C(3))$	-0,008024	0,002153	
LZ4			
Test Statistic	Value	df	Probability
t-statistic	2,671491	125	0,0086
F-statistic	7,136864	(1, 125)	0,0086
Chi-square	7,136864	1	0,0076
Null Hypothesis: $(C(12))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(12) / (1 - C(2) - C(3))$	0,286245	0,107148	

Table B.3 (continued) : Wald test of the equation of deposit growth.

Z6			
Test Statistic	Value	df	Probability
t-statistic	-1,049493	125	0,296
F-statistic	1,101436	(1, 125)	0,296
Chi-square	1,101436	1	0,294
Null Hypothesis: $(C(13)+C(14))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(13) + C(14)) / (1 - C(2) - C(3))$	-2,93E-11	2,79E-11	
Z8			
Test Statistic	Value	df	Probability
t-statistic	1,818045	125	0,0715
F-statistic	3,305286	(1, 125)	0,0715
Chi-square	3,305286	1	0,0691
Null Hypothesis: $(C(15))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(15) / (1 - C(2) - C(3))$	2,91E-09	1,60E-09	
Z9			
Test Statistic	Value	df	Probability
t-statistic	-1,066678	125	0,2882
F-statistic	1,137802	(1, 125)	0,2882
Chi-square	1,137802	1	0,2861
Null Hypothesis: $(C(16)+C(17))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(16) + C(17)) / (1 - C(2) - C(3))$	-7,87E-09	7,37E-09	
Z10			
Test Statistic	Value	df	Probability
t-statistic	2,105825	125	0,0372
F-statistic	4,4345	(1, 125)	0,0372
Chi-square	4,4345	1	0,0352
Null Hypothesis: $(C(18)+C(19))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(18) + C(19)) / (1 - C(2) - C(3))$	5,83E-09	2,77E-09	
Z11			
Test Statistic	Value	df	Probability
t-statistic	-0,206924	125	0,8364
F-statistic	0,042818	(1, 125)	0,8364
Chi-square	0,042818	1	0,8361
Null Hypothesis: $(C(20)+C(21))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(20) + C(21)) / (1 - C(2) - C(3))$	-1,48E-09	7,14E-09	
Z12			
Test Statistic	Value	df	Probability
t-statistic	1,629238	125	0,1058
F-statistic	2,654415	(1, 125)	0,1058
Chi-square	2,654415	1	0,1033
Null Hypothesis: $(C(22))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(22) / (1 - C(2) - C(3))$	2,16E-07	1,32E-07	

Table B.3 (continued) : Wald test of the equation of deposit growth.

X1/X16			
Test Statistic	Value	df	Probability
t-statistic	-0,332414	125	0,7401
F-statistic	0,110499	(1, 125)	0,7401
Chi-square	0,110499	1	0,7396
Null Hypothesis: $(C(23)+C(24)+C(25))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$(C(23) + C(24) + C(25)) / (1 - C(2) - C(3))$	-0,09789		0,294481
X6/X16			
Test Statistic	Value	df	Probability
t-statistic	3,893138	125	0,0002
F-statistic	15,15653	(1, 125)	0,0002
Chi-square	15,15653	1	0,0001
Null Hypothesis: $(C(26)+C(27)+C(28)+C(29)+C(30))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$(C(26) + C(27) + C(28) + C(29) + C(30)) / (1 - C(2) - C(3))$	3,434602		0,882219
Delta method computed using analytic derivatives.			

Table B.4 : Wald test of the equation of churn rate.**Estimation Equation:**

$$Y7 = C(1) + C(2)*Y7(-1) + C(3)*Y7(-3) + C(4)*BRANDEQUITY(-4) + C(5)*X4(-4) + C(6)*(Z1-Z2) + C(7)*LZ5 + C(8)*Z6(-4) + C(9)*Z7(-4) + C(10)*Z8 + C(11)*Z8(-3) + C(12)*Z8(-4) + C(13)*Z9(-2) + C(14)*Z9(-3) + C(15)*Z10 + C(16)*Z10(-1) + C(17)*Z10(-4) + C(18)*Z11 + C(19)*Z11(-1) + C(20)*Z11(-2) + C(21)*Z12(-1) + C(22)*Z12(-2) + C(23)*Z12(-3) + C(24)*Z12(-4) + C(25)*X1/X16 + C(26)*X1(-2)/X16(-2) + C(27)*X1(-3)/X16(-3) + C(28)*X1(-4)/X16(-4) + C(29)*X6/X16 + C(30)*X6(-1)/X16(-1) + C(31)*X6(-4)/X16(-4) + [CX=F,ESTSMPL="2013Q1 20]$$

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Test Statistic	Value	df	Probability
t-statistic	-1,93879	124	0,0548
F-statistic	3,758902	(1, 124)	0,0548
Chi-square	3,758902	1	0,0525
Null Hypothesis: $(C(4))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(4) / (1 - C(2) - C(3))$	-0,17072		0,088057

X4

Test Statistic	Value	df	Probability
t-statistic	2,356637	124	0,02
F-statistic	5,553736	(1, 124)	0,02
Chi-square	5,553736	1	0,0184
Null Hypothesis: $(C(5))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(5) / (1 - C(2) - C(3))$	1,424631		0,604519

Z1-Z2

Test Statistic	Value	df	Probability
t-statistic	2,182498	124	0,031
F-statistic	4,763297	(1, 124)	0,031
Chi-square	4,763297	1	0,0291
Null Hypothesis: $(C(6))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(6) / (1 - C(2) - C(3))$	0,049418		0,022643

Table B.4 (continued) : Wald test of the equation of churn rate.

LZ5			
Test Statistic	Value	df	Probability
t-statistic	3,964271	124	0,0001
F-statistic	15,71544	(1, 124)	0,0001
Chi-square	15,71544	1	0,0001
Null Hypothesis: $(C(7))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(7) / (1 - C(2) - C(3))$	1,719082		0,433644
Z6			
Test Statistic	Value	df	Probability
t-statistic	-3,4813	124	0,0007
F-statistic	12,11948	(1, 124)	0,0007
Chi-square	12,11948	1	0,0005
Null Hypothesis: $(C(8))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(8) / (1 - C(2) - C(3))$	-8,99E-10		2,58E-10
Z7			
Test Statistic	Value	df	Probability
t-statistic	-2,4926	124	0,014
F-statistic	6,213053	(1, 124)	0,014
Chi-square	6,213053	1	0,0127
Null Hypothesis: $(C(9))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$C(9) / (1 - C(2) - C(3))$	-1,99E-07		7,98E-08
Z8			
Test Statistic	Value	df	Probability
t-statistic	-1,75955	124	0,081
F-statistic	3,096009	(1, 124)	0,081
Chi-square	3,096009	1	0,0785
Null Hypothesis: $(C(10)+C(11)+C(12))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$(C(10) + C(11) + C(12)) / (1 - C(2) - C(3))$	-6,14E-08		3,49E-08
Z9			
Test Statistic	Value	df	Probability
t-statistic	1,475376	124	0,1426
F-statistic	2,176735	(1, 124)	0,1426
Chi-square	2,176735	1	0,1401
Null Hypothesis: $(C(13)+C(14))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$(C(13) + C(14)) / (1 - C(2) - C(3))$	1,27E-07		8,63E-08
Z10			
Test Statistic	Value	df	Probability
t-statistic	2,425909	124	0,0167
F-statistic	5,885034	(1, 124)	0,0167
Chi-square	5,885034	1	0,0153
Null Hypothesis: $(C(15)+C(16)+C(17))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
$(C(15) + C(16) + C(17)) / (1 - C(2) - C(3))$	7,91E-08		3,26E-08

Table B.4 (continued) : Wald test of the equation of churn rate.

Z11			
Test Statistic	Value	df	Probability
t-statistic	-1,41397	124	0,1599
F-statistic	1,999305	(1, 124)	0,1599
Chi-square	1,999305	1	0,1574
Null Hypothesis: $(C(18)+C(19)+C(20))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(18) + C(19) + C(20)) / (1 - C(2) - C(3))$	-1,65E-07	1,17E-07	
Z12			
Test Statistic	Value	df	Probability
t-statistic	4,190117	124	0,0001
F-statistic	17,55708	(1, 124)	0,0001
Chi-square	17,55708	1	0
Null Hypothesis: $(C(21)+C(22)+C(23)+C(24))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(21) + C(22) + C(23) + C(24)) / (1 - C(2) - C(3))$	7,69E-06	1,84E-06	
X1/X16			
Test Statistic	Value	df	Probability
t-statistic	-3,98624	124	0,0001
F-statistic	15,89012	(1, 124)	0,0001
Chi-square	15,89012	1	0,0001
Null Hypothesis: $(C(25)+C(26)+C(27)+C(28))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(25) + C(26) + C(27) + C(28)) / (1 - C(2) - C(3))$	-10,466	2,625523	
X6/X16			
Test Statistic	Value	df	Probability
t-statistic	-8,16854	124	0
F-statistic	66,72501	(1, 124)	0
Chi-square	66,72501	1	0
Null Hypothesis: $(C(29)+C(30)+C(31))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(29) + C(30) + C(31)) / (1 - C(2) - C(3))$	-49,0186	6,000899	
Delta method computed using analytic derivatives.			

Table B.5 : Wald test of the equation of brand equity.

Estimation Equation:			
$\text{BRANDEQUITY} = C(1) + C(2)*\text{BRANDEQUITY}(-1) + C(3)*\text{BRANDEQUITY}(-2) + C(4)*X5(-1) + C(5)*X5(-4) + C(6)*X10(-2) + C(7)*X10(-3) + C(8)*X10(-4) + C(9)*LZ3 + C(10)*LZ4 + C(11)*LZ5 + C(12)*Z6(-1) + C(13)*Z6(-3) + C(14)*Z7(-2) + C(15)*Z8 + C(16)*Z8(-2) + C(17)*Z8(-3) + C(18)*Z9(-1) + C(19)*Z10 + C(20)*Z10(-3) + C(21)*Z11(-2) + C(22)*Z12(-1) + C(23)*Z12(-3) + C(24)*X2(-1)/Y4(-1) + C(25)*X2(-3)/Y4(-3) + C(26)*X2(-4)/Y4(-4) + C(27)*X7/Y4 + C(28)*X7(-1)/Y4(-1) + C(29)*X7(-2)/Y4(-2) + C(30)*X7(-3)/Y4(-3) + C(31)*X7(-4)/Y4(-4) + [CX=F]$			
X5			
Test Statistic	Value	df	Probability
t-statistic	-4,82744	124	0
F-statistic	23,30416	(1, 124)	0
Chi-square	23,30416	1	0
Null Hypothesis: $(C(4)+C(5))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(4) + C(5)) / (1 - C(2) - C(3))$	-0,74719	0,15478	

Table B.5 (continued) : Wald test of the equation of brand equity.

X10			
Test Statistic	Value	df	Probability
t-statistic	3,728414	124	0,0003
F-statistic	13,90107	(1, 124)	0,0003
Chi-square	13,90107	1	0,0002
Null Hypothesis: (C(6)+C(7)+C(8))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(6) + C(7) + C(8)) / (1 - C(2) - C(3))	0,04126	0,011066	
LZ3			
Test Statistic	Value	df	Probability
t-statistic	2,265525	124	0,0252
F-statistic	5,132604	(1, 124)	0,0252
Chi-square	5,132604	1	0,0235
Null Hypothesis: (C(9))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(9) / (1 - C(2) - C(3))	0,430877	0,190188	
LZ4			
Test Statistic	Value	df	Probability
t-statistic	2,420303	124	0,017
F-statistic	5,857869	(1, 124)	0,017
Chi-square	5,857869	1	0,0155
Null Hypothesis: (C(10))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(10) / (1 - C(2) - C(3))	0,869229	0,359141	
LZ5			
Test Statistic	Value	df	Probability
t-statistic	-2,68161	124	0,0083
F-statistic	7,191032	(1, 124)	0,0083
Chi-square	7,191032	1	0,0073
Null Hypothesis: (C(11))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(11) / (1 - C(2) - C(3))	-0,61224	0,228311	
Z6			
Test Statistic	Value	df	Probability
t-statistic	-0,96977	124	0,334
F-statistic	0,940456	(1, 124)	0,334
Chi-square	0,940456	1	0,3322
Null Hypothesis: (C(12)+C(13))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
(C(12) + C(13)) / (1 - C(2) - C(3))	-1,13E-10	1,17E-10	
Z7			
Test Statistic	Value	df	Probability
t-statistic	-2,69741	124	0,008
F-statistic	7,276013	(1, 124)	0,008
Chi-square	7,276013	1	0,007
Null Hypothesis: (C(14))/(1-C(2)-C(3))=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(14) / (1 - C(2) - C(3))	-7,50E-08	2,78E-08	

Table B.5 (continued) : Wald test of the equation of brand equity.

Z8			
Test Statistic	Value	df	Probability
t-statistic	5,916276	124	0
F-statistic	35,00232	(1, 124)	0
Chi-square	35,00232	1	0
Null Hypothesis: $(C(15)+C(16)+C(17))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(15) + C(16) + C(17)) / (1 - C(2) - C(3))$	8,33E-08	1,41E-08	
Z9			
Test Statistic	Value	df	Probability
t-statistic	-1,71135	124	0,0895
F-statistic	2,928718	(1, 124)	0,0895
Chi-square	2,928718	1	0,087
Null Hypothesis: $(C(18))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(18) / (1 - C(2) - C(3))$	-3,44E-08	2,01E-08	
Z10			
Test Statistic	Value	df	Probability
t-statistic	4,270116	124	0
F-statistic	18,23389	(1, 124)	0
Chi-square	18,23389	1	0
Null Hypothesis: $(C(19)+C(20))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(19) + C(20)) / (1 - C(2) - C(3))$	3,53E-08	8,26E-09	
Z11			
Test Statistic	Value	df	Probability
t-statistic	-2,17419	124	0,0316
F-statistic	4,727086	(1, 124)	0,0316
Chi-square	4,727086	1	0,0297
Null Hypothesis: $(C(21))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$C(21) / (1 - C(2) - C(3))$	-5,21E-08	2,40E-08	
Z12			
Test Statistic	Value	df	Probability
t-statistic	3,844467	124	0,0002
F-statistic	14,77993	(1, 124)	0,0002
Chi-square	14,77993	1	0,0001
Null Hypothesis: $(C(22)+C(23))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(22) + C(23)) / (1 - C(2) - C(3))$	1,49E-06	3,87E-07	
X2/Y4			
Test Statistic	Value	df	Probability
t-statistic	1,630732	124	0,1055
F-statistic	2,659287	(1, 124)	0,1055
Chi-square	2,659287	1	0,1029
Null Hypothesis: $(C(24)+C(25)+C(26))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
$(C(24) + C(25) + C(26)) / (1 - C(2) - C(3))$	91,35239	56,01925	

Table B.5 (continued) : Wald test of the equation of brand equity.

X7/Y4			
Test Statistic	Value	df	Probability
t-statistic	-4,14684	124	0,0001
F-statistic	17,19628	(1, 124)	0,0001
Chi-square	17,19628	1	0
Null Hypothesis: $(C(27)+C(28)+C(29)+C(30)+C(31))/(1-C(2)-C(3))=0$			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
$(C(27) + C(28) + C(29) + C(30) + C(31)) / (1 - C(2) - C(3))$		-1355,69	326,9206
Delta method computed using analytic derivatives.			



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PUBLICATIONS, PRESENTATIONS AND PATENTS ON THE THESIS:

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