

Effect of Business/IT Alignment on Internal Users of E-Services in Banks

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Summary

Business/IT Alignment is one of the top five management concerns. The relationship between Business/IT Alignment and experience, satisfaction and loyalty of internal users of E-Services is not clearly determined in the research literature. We conducted a research in the banking industry to determine this relation. The result from the research is that Business/IT Alignment has a positive effect on experience. Experience is mediating this effect on satisfaction and loyalty. The most important factor for improving and sustaining Business/IT Alignment is innovativeness of IT, which must be nurtured and developed.

Key words:

Business/IT Alignment, E-service

1. Introduction

Business and Information Technology (IT) alignment is one of the top five management concerns in the last decade. In 2009 business and IT alignment was ranked on the second place [1], while in 2008 it was ranked on the first place [2].

The Business/IT Alignment is defined as an alignment of the company's IT resources with the objectives of the business units [3].

The reason for the increased importance of the Business/IT alignment is the evolving role of IT during the last decade from a back office into a strategic role [4]. The problem is recognized that an IT investment cannot yield to the anticipated values. The reason for this is the lack of alignment between the business and the IT strategy in the companies [4]. The model is proposed in [4] for aligning IT with business strategy, consisting of four domains, two internal and two external. The two external domains, referred to as Strategy domains, are the Business Strategy domain and the IT Strategy domain. The two Internal domains are the Business Infrastructure and the IT Infrastructure domain.

The six most important enablers and inhibitors related to applying IT in a harmony with business strategy, goals and needs are defined in [5] and [6]. The six most important enablers are: senior executive support for IT, IT involved in strategy development, IT understanding of the business, business/IT partnership, well prioritized projects and

demonstrated IT leadership. The six most important inhibitors are: lack of business/IT close relationship, IT does not prioritize well, IT fails to meet its commitments, IT does not understand the business, senior executives do not support IT and IT management lacks leadership.

Good strategic alignment leads to a better customer service quality [7].

The goals of the recent researches of the alignment are: to define requirements and strategies for achieving Business/IT Alignment, to identify components of the alignment and to identify methods, techniques and tools for enhancing alignment [7].

Our objective is to determine the direct relationship between Business/IT Alignment on one hand, and the experience of the internal users from using E-Services, their satisfaction and their loyalty on the other hand. This relationship is usually mediated by service quality or some other construct.

This paper is an interim outcome of the major research project implemented to define the relationship between Business/IT Alignment, Service Climate, ICT Capabilities and other constructs as predictors, and Quality Assurance as an effect [8].

We set forth the following hypotheses for our study:

Hypothesis 1: There is a positive relationship between Business/IT Alignment and Experience of the internal users from using E-services.

Hypothesis 2: The Experience of the internal users from consuming E-services is mediating the effect from Business/IT Alignment on the Satisfaction and Loyalty of the internal users.

Hypothesis 3: Business/IT Alignment consists of two components: one related to the business issues, and the other related to IT issues.

2. Research Method

2.1 Sample and Procedure

The population for the study is comprised of employees in the banks of the Republic of Macedonia. The sample is taken from one of the biggest banks. The criteria for inclusion in the sample are: the bank employee should use E-Services with the goal of fulfilling his job duties as well

as to have a university degree. The exclusion of IT department employees in the sample is a mandatory requirement. The rationale for such criteria is to include only the internal customers of the IT services provided inside the bank.

The deployed research method is the quantitative research – survey. The bank made the survey questionnaire accessible inside the local intranet and each department was obliged to provide at least 15 responded questionnaires.

126 questionnaires were collected in one month. For solving the missing data problem, listwise deletion method is used, which yields the sample size of 112 respondents.

The ratio N:n [9] that defines the number of respondents per parameter in our model is 5,9 (112/19). The number of indicators used in the model is 19. The ratio is smaller than the number of 15 for each parameter as required to minimize the problems with deviations from normality [10].

2.2 Instrument

The proposed instrument to confirm the hypotheses consists of six constructs: ALI, ALIB, ALID, EXP, SAT and LOY.

Operationalization of the three constructs related to Business/IT Alignment is based on the six most important enablers [5]. Two items are included in addition: level of routines inside structures, practices and processes, and level of innovativeness of the IT department [11]. We divide the eight items into two first-order factors: ALIB and ALID. ALIB is a component of alignment that is inclined towards the business and relates to the level of senior executive support for IT (ALIB1), level of IT involvement in developing business strategy (ALIB2), level of routines (ALIB3) and level of partnership between business and IT (ALIB4). ALID is the other component of the alignment which captures the level of well-prioritizing IT projects (ALID1), level of IT leadership (ALID2), level of IT knowledge and understanding of the business (ALID3), and level of innovativeness (ALID4).

The construct ALI is a formative second-order factor that captures both first-order factors, ALIB and ALID. In addition, two reflective indicators are included: ALIG1 reflects improvement in alignment in the course of time, and ALIG2 is related to the overall level of Business/IT Alignment inside the bank. The indicators ALIG1 and ALIG2 are present to satisfy the requirements for emitting two paths to two other indicators for assessing the model with second-order constructs taken as formative constructs [12] [13].

The three indicators for Satisfaction (SAT) indicate the level of satisfaction (SAT1) and the level of happiness from using E-Services (SAT2), as well as the level of satisfied needs required for fulfillment of the tasks (SAT3).

The latent construct Experience (EXP) relates to the level of positive experience (EXP1), fulfilled expectations (EXP2) and experienced benefits (EXP3), while Loyalty (LOY) relates to positive thinking about E-Services (LOY1), recommending bank services to others (LOY2) and the opinion whether users will do more business with the bank (LOY3).

The main criterion for defining the number of measurement levels is how well subjects can discriminate between level of stimuli. Any measure that can assume eleven [14] or fifteen [15] distinct scale points can be regarded as a continuous variable. We accept the number of measurement levels to be 15 for two reasons: to be more compliant with the requirements for continuous variable, and to provide more granular approach and more options to respondents. Assessing the item with 1 means that the respondent strongly does not agree with the expressed sentence, scoring 8 means that the respondent has neutral opinion, and scoring 15 means that the respondents strongly support the expressed sentence.

The formative factor ALI has two indicators, and factors ALIB and ALID have four indicators. Isolated measurement model of one latent construct with two indicators is under-identified, and isolated measurement model of one latent construct with three indicators is just-identified, but complete measurement model including all six constructs is over-identified as presented in Table 1.

The model presented in the study is recursive.

Table 1: Computation of degrees of freedom

Number of distinct sample moments:	209
Number of distinct parameters to be estimated:	72
Degrees of freedom (209 - 72):	137

3. Results

The analysis of the measurement model is performed with Confirmatory Factor Analysis – CFA. The structural model is analyzed with Structural Equation Model - SEM. We use the program AMOS 18 for performing both CFA and SEM analysis. We use CFA and SEM because the model that is subject of this study is extract from the bigger model for Quality Assurance of E-services and we want to be consistent with the further analysis that we are going to perform. Regression analysis is not appropriate for analyzing the model, because one construct is dependent variable for one part of the model, but in the same time that particular construct is independent variable for the other part of the model as well. Regression analysis is not capable for performing such analysis simultaneously [10].

The input in the program AMOS 18 is an Excel file with deleted rows that contain missing data. The estimation technique is maximum likelihood estimation – MLE.

3.1 Descriptive Statistics

Table 2 presents the descriptive statistics including mean, standard deviation, skewness and kurtosis. High kurtosis can influence normality of the data [16].

The skew index (SI) for all variables is less than 3, except for indicators ALID2 SI=3,396 and ALID4 SI=3,300 that are slightly higher than the cutoff value of 3 [16]. The kurtosis index (KI) for all indicators is less than 4, with the exception of the indicator ALIB2 that has KI=5,325. Both indexes prove that the data do not deviate from multivariate normality [16].

Table 2: Descriptive Statistics

Indicator	Mean	STD	Skew	Kurtosis
ALIB1	13,88	2,084	-2,073	3,533
ALIB2	13,45	2,514	-2,119	5,325
ALIB3	11,96	2,876	-,591	-,802
ALIB4	12,89	2,864	-1,483	2,035
ALID1	12,02	2,995	-,615	-,643
ALID2	10,53	3,396	-,467	-,046
ALID3	12,39	2,942	-,691	-1,037
ALID4	12,33	3,300	-1,158	,436
ALIG1	13,04	2,562	-1,228	,341
ALIG2	12,67	2,689	-,902	-,554
SATI1	13,37	2,218	-1,332	,602
SATI2	12,39	2,833	-,781	-,729
SATI3	13,37	2,105	-1,434	1,170
EXPI1	13,53	2,152	-1,526	1,168
EXPI2	12,92	2,275	-,942	-,317
EXPI3	13,80	1,854	-1,658	1,968
LOYI1	13,27	2,325	-1,427	,947
LOYI2	14,05	1,878	-2,155	3,662
LOYI3	14,02	1,908	-2,206	3,883

3.2 Measurement Model

The measurement model presented in Fig 1 is a congeneric model satisfying the following requirements: the constructs are unidimensional with all cross-loadings constrained at zero, with no covariance between construct error variances and no covariance within construct error variances [10].

The measurement model was tested for construct validity.

All factor loadings of indicators on corresponding factors are above 0,634 which is the smallest factor loading of the indicator ALIB1 on the ALIB construct. The highest loading is the loading from the indicator ALID4 on ALID. Factor loading in the terminology of AMOS is Standardized Regression Weight.

Average Variance Extracted is calculated as the mean variance extracted for the indicators loading on a construct [10]. For our model all AVEs are higher than 0,50. Only AVE of the construct ALIB is on the lower limit. AVEs are presented in Table 3. Convergent validity is proved by the factor loadings and AVEs.

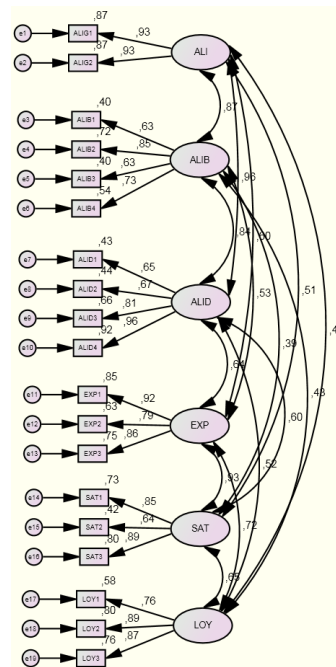


Fig 1 Measurement Model.

Table 3: Average Variance Extracted

Construct	AVE
ALI	0,87
ALIB	0,51
ALID	0,61
EXP	0,74
SAT	0,65
LOY	0,71

For determination of the discriminant validity we used more rigorous test to compare the average variance-extracted values for any two constructs with the square of the correlation between the same two constructs [10].

Discriminant validity is problematic for two pairs of constructs. Their squared correlation is higher than the AVE of the same constructs: $ALIB \leftrightarrow ALID$ and $SAT \leftrightarrow EXP$. The constructs $ALID$ and $ALIB$ relate directly to the concept of Business/IT Alignment and we can explain the problematic discriminant validity with this similarity. The same applies to the problematic discriminant validity between SAT and EXP . Satisfaction and Experience are similar constructs. We do not intervene in the measurement model because CFA fit of the measurement model is very good.

Diagnostics of the measurement model is obtained from standardized residual covariances and modification indices. Standardized residual is the difference between observed covariance terms and estimated covariance terms [10]. We can notice from the standardized residual covariances matrix in the output of the program AMOS 18 used for the measurement model that the difference between $LOY1$ and $ALIB1$ is 2,807, and the difference between $LOY1$ and $ALIG2$ is 2,760. Standardized residuals below $|2,5|$ do not suggest a problem [10]. Although residuals are slightly higher than the proposed threshold of $|2,5|$, they suggest that something is wrong. Modification indices show that Regression Weights are significant among $LOY1$ and the following latent constructs: EXP , ALI , SAT , $ALID$ and $ALIB$. We can conclude from the above mentioned that the indicator $LOY1$ is causing problems in the model. For that reason we remove the indicator $LOY1$. Comparison of fit indices for both models, with and without indicator $LOY1$, is presented in the Table 4. From the Table 4 we conclude that the fit of the measurement model is very good when the indicator $LOY1$ is removed from the model.

Table 4: Fit of Measurement Models

	<i>With LOY1</i>	<i>Without LOY1</i>
CMIN	207,122	149,824
DF	137	120
CMIN/DF	1,512	1,249
CFI	0,957	0,980
RMSEA	0,068	0,047

3.3 Structural Model

We have exogenous and endogenous variables in the structural model. In our model observed endogenous variables are all 18 indicators: four indicators for $ALIB$, four indicators for $ALID$, two indicators for $ALIB$, three indicators for SAT and EXP , and two indicators for LOY . Unobserved exogenous variables are: eighteen error variances of each indicator and six variances of each latent factor.

The final structural model with Standardized Regression Weights excluding indicator $LOY1$ is presented in Fig. 2. We tested two alternative models. The first model $M1$ has direct paths from ALI to EXP , SAT and LOY ($ALI \rightarrow EXP$, $ALI \rightarrow SAT$ and $ALI \rightarrow LOY$). The second model $M2$ has direct paths from ALI to EXP , from EXP to SAT and from SAT to LOY ($ALI \rightarrow EXP$, $EXP \rightarrow SAT$ and $SAT \rightarrow LOY$). Model fits are presented in Table 5. The best fit is obtained with the model M , which is our initial model from Fig 2.

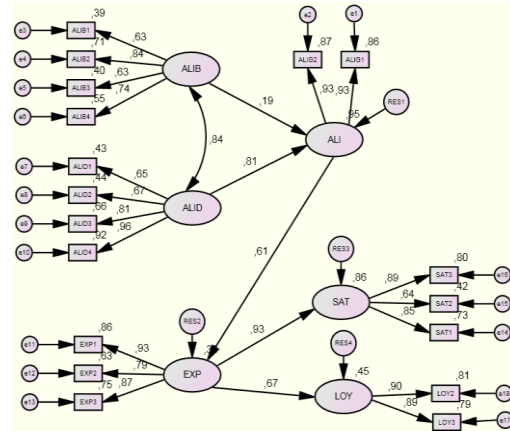


Fig. 2 Structural Model with Standardized Regression Weights

The fit indices of the initial structural model M and two alternative models, $M1$ and $M2$, are presented in Table 5.

Table 5: Fit of Structural Models

	<i>M</i>	<i>M1</i>	<i>M2</i>
CMIN	163,271	288,784	168,193
DF	129	129	129
CMIN/DF	1,266	2,239	1,304
CFI	0,977	0,894	0,974
RMSEA	0,049	0,106	0,052

4. Discussion

The focus of the study is put on the effect that Business/IT Alignment has on Experience, Satisfaction and Loyalty of internal users of E-Services in banks. We used information only from internal users.

The fit indices of the measurement model and the structural model, as well as the Standardized Regression Weights support our hypotheses.

Business/IT Alignment when regressed directly to the Satisfaction and Loyalty showed the worst model fit. The mediating role of Satisfaction from Experience towards

Loyalty provided also a good model fit, however the initial model has the best fit.

The best model fit is the logical one. Business/IT Alignment is positively influencing Experience when using IT-based services. Obtaining positive Experience leads to bigger Satisfaction and bigger Loyalty. Experience is influencing Satisfaction on a higher level than Loyalty. Experience can be mingled with Satisfaction, which is proved by the discriminant validity, but they are different concepts.

Business/IT Alignment is formed and influenced by two factors. The first factor related to business issues does not have strong influence on the alignment. Much stronger effect on alignment has the second factor that is related to the IT issues. The innovativeness of IT has the strongest influence on the alignment.

We can conclude that Business/IT Alignment is much more dependent on IT related issues, than business related issues. Since innovativeness of IT is the crucial factor for alignment, IT innovativeness must be nurtured and developed inside the bank.

Positive Experience from using E-Services causes bigger Satisfaction of the internal users. Satisfaction is dependent upon a high level of Experience. Loyalty is not dependent that much on Experience and some other factors, not covered by our model, have significant contribution to the Loyalty. The explanation for the previous is that Loyalty of internal users is not a clearly distinct concept, since all internal users have some level of subjectivity towards the bank they work in, thus assessing their loyalty towards the same bank is a complex item.

The conclusion reached from the discussion and the presented results is the one that our hypotheses are confirmed.

4.1 Implications for Future Research

The limitation of the study is the missing multiple group analysis. The results must be validated with a second sample [17]. The second sample should be some other bank. Including external users in the study will also contribute to the higher quality of the results. External users will provide more objective assessment for satisfaction, experience and loyalty.

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