

# ORGANIZATIONAL LEARNING - THE BOOST TO ORGANIZATIONAL PERFORMANCE: AN ORGANIZATION DEVELOPMENT ASSESSMENT AMONGST AUSTRIAN BUSINESS ENTITIES

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## Abstract

*Organizational Learning is a major factor in an organizations development in both economic as well as organizational terms. This is true even more so, as the momentum of driven by technological and macroeconomic developments is getting ever greater. In a series of quantitative surveys amongst organizations in different branches of business the author gathers relevant data different provinces in Austria and suggests interdependencies as well as possible consequences for organizations and highlights some suggestions for the further course of action both in research and on a company level.*

*The research project is based on the hypothesis of Organizational Learning influencing Organizational Performance in the sense of economic resilience and vice versa. Furthermore the author assumes a positive connection between Human Resource Management (HRM) firstly positively influencing Organizational Learning and secondly also directly positively influencing Organizational Performance. Preliminary findings suggest however, that the presupposed connection is weaker than anticipated respectively the direction of the presupposed mutual influence is not predetermined.*

**Keywords:** Organizational Learning, Organizational Performance, Learning Organization, Organization Development.

## Introduction

Leaning on the opinion of (Celik, 2014) knowledge is the most important source of wealth in the information society and learning on an individual basis is not enough to sustain it. “*Knowledge increasingly becomes a key factor for productivity, it has also become a currency for competitive success*” (Egan et al., 2004), as contemporary economies are increasingly based on knowledge and information (Kuo, 2011; OECD, 1996). Accordingly the ability of companies to develop, produce and sell products and services regardless of their branch of business stems from professional knowledge and know-how. This seems to be all the more true as the technological revolution is accelerating a global transformation of the competitive environment (Kuo, 2011). In other words the possibility to generate profits and hence the very source of existence of every business unit is directly linked to its collective relevant knowledge and know-how. Building up, renewing and fostering of this vital resource therefore should be a major concern of any business entity, as argumentum e contrario the converse argument, namely resisting the need for innovation is likely to result in a businesses’ downfall (Kuo, 2011; Leavy, 1998).

Consequently, organizations should learn to succeed (Vemić, 2007) and not surprisingly therefore, recent research shows that an increasing number of organizations implement Organizational Learning strategies (Chen et al., 2005, 2006; Ju et al., 2005; Lee, Les Tien- Shang, and Franco Gandolfi, n.d.; Lin and Kuo, 2007; Pai, 2006) and introduced various professional training programs with the goal of improving Organizational Performance (Choy et al., 2006; Davenport, Thomas H., David W. De Long, and Michael C. Beers, n.d.; Gold, Andrew H., Arvind Malhotra, and Albert H. Segars, 2001; Lin and Kuo, 2007; Reus and Liu, 2004; Wickramasinghe, Nilmini, n.d.).

As most of the successful organizations define themselves as Learning Organizations (Vemić, 2007), this research project accordingly seeks to deepen and widen the understanding of the anticipated connections between Organizational Learning and Organizational Performance with special emphasis on the economy in Austria.

### **Learning Organizations & Organizational Learning**

The concept of learning can be understood from various points of view; however, there is rarely agreement within disciplines as to what learning is and how it occurs (Fiol and Lyles, 1985a). Consequently different abstract concepts with now and again considerable overlap have been evolving alongside or simultaneously to each other. So, in order to get a clear notion of the theme the main concepts should be delineated briefly.

An organization that intentionally builds up and fosters strategies and structures concerning Organizational Learning experience have been labeled as Learning Organizations. The characteristics of the learning organization is described by Peler (et al. 1989 in Dasgupta, 2012, p. 3) as *“an organization which facilitates the learning of all its members and continually transforms itself”* and, according to Pedler, M., J. Burgoyne, and T. Boydell. (1991 in Dasgupta, 2012), *“should consciously and intentionally devote to the facilitation of individual learning in order to continuously transform the entire organization and its context.”*

According to (Celik, 2014) learning may be defined as permanent change in behavior as a result of consolidated application of experiences where Organizational Learning is a process which coordinates systemic changes and the purpose of this activity is to facilitate the adoption of the new condition (Leon, 2011). Whereas this definition underlines the importance of accommodating change, Fiol and Lyles (1985) state that *“Organizational learning means the process of improving actions through better knowledge and understanding”* and therefore point out the inherent necessity of knowledge management.

Huber (1991 in Hanvanich, 2006) also substantiates that view of Organizational Learning by describing it as a process consisting of four stages, which are: acquisition, dissemination, interpretation and, storage of knowledge. In accordance with the aforementioned authors the approach by López et al. (2005, p. 228) to Organizational Learning highlights the processual character of the latter by defining it as *“a dynamic process of creation, acquisition and integration of knowledge aimed at the development of resources and capabilities that contribute to better organizational performance.”* The pivotal parameters of the concept therefore are summed up by Duncan, R., Weiss, A. (1979; in Lin and Kuo, 2007) by stating that Organizational Learning is concerned with developing knowledge and therefore is considered a continuous process of knowledge creation, acquisition and transformation.

Taking into account the aforementioned the definition and concepts of Organizational Learning the definition by the author in the context of this work respectively the understanding of the abstract concept that pours in the further research proceedings is: *“Organizational Learning is an attitude towards continuous advancement by means of acquisition, distribution, and interpretation of knowledge aimed at the development of lasting capabilities contributing to competitive Organizational Performance”*.

In the eyes of the author, this notion of Organizational Learning appropriately acknowledges the necessary qualities relevant for the research interest. First and foremost the paramount quality of the connection between knowledge as input, the learning process as the pivotal point and the consequential organizational output. And secondly, an ever faster changing economic environment necessitates a non-static understanding of Organizational Learning, as otherwise it would become outdated before long. Therefore the set of attributes and connections, in the mind of the researcher, need to be understood as an attitude towards a certain end, e.g. Organizational Performance, rather than an externally imposed or internally happening process, as it is perceived by most previous authors. And in that sense, as it is the belief of the author, Organizational Learning should contribute to a lasting, competitive Organizational Performance, as the overriding importance for any organization is long-term survival.

### **Organizational Performance**

*“Organizational performance is the ultimate dependent variable of interest for researchers concerned with just about any area of management. This broad construct is essential in allowing researchers and managers to evaluate firms over time and compare them to rivals. In short, organizational performance is the most important criterion in evaluating organizations, their actions, and environments.”* (Richard et al., 2009, p. 1)

Nonetheless, *“the definition of ‘organizational performance’ is a surprisingly open question with few studies using consistent definitions and measures”*(see Kirby, 2005). Instead, performance measurement as dependent variable is so accepted in management research that its structure and definition is rarely explicitly justified (March and Sutton, 1997).

As a matter of fact *“previous studies that underline the positive effects that organizational learning has on business performance differ on what they understand by performance”* (López et al., 2005a).

Where *“the prescriptive literature considers financial results as business performance* (Lei et al., 1999). The author seeks to gain a broad, holistic understanding of Organizational Performance as basis for measurement, as *“although these outcomes are important, there may be more proximate outcomes that may mediate the relationship with financial results”* (López et al., 2005a). A complete notion of Organizational Performance it seems should facilitate all aspects of outcomes. Organizational Performance accordingly has also been defined as *“accumulated end results of all the organization’s work processes and activities.”* (Robbins and Coulter, 2002). The definition recognizes the holistic nature of

the abstract concept as incorporates *“all the organization’s work processes and activities”*.

For Richard et al. (2009) Organizational Performance *“encompasses three specific areas of firm outcomes: financial performance (profits, return on assets, return on investment, etc.); market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added, etc.)”*.

Taking into account the aforementioned the definition by the author of Organizational Performance in the context of this work respectively the understanding of the abstract concept that pours in the further research proceedings is *“a holistic approach incorporating the end results of all the organization’s work processes and activities directed at lasting competitive advantage; especially concerning economic performance, competitiveness, and human resources.”*

The aim of this work is not to focus on a specific characteristic or set of characteristics but much rather to get a comprehensive view of a company’s state respectively development. Accordingly the approach to Organizational Performance in this project will be a holistic one taking into account the output of all the end results of a company’s work processes and activities. Where, derived from the relevant literature on the topic in combination with the direction of the current research project three areas seem to be of paramount importance. First, economic performance as factual basis for long-term survival in a competitive environment. Second, competitiveness in the sense of a broader basis for competitive advantage as foundation for the right to exist. And third, human resources as partition and centerpiece of OL. Furthermore, in the mind of the researcher it is important to incorporate the aim all the processes and activities are directed at, which is lasting competitiveness of the respective organization.

## **Research model**

After an extensive literature review of the work that has been done approximately the last two decades the Structural Equation Model (SEM) includes dimensions suggested by various researchers as well as extensions and adaptations made by the author. The exogen variable of Organizational Learning was derived based on the findings of (Kuo, 2011; Lin and Kuo, 2007; Lopez, 2006). The exogen variable of HRM (Human Resource Management) as part of Organizational Learning was derived based on previous works of (Gomez-Mejia, 2010, p. -; Gupta, Ashok K., and Arvind Singhal, 1993; Kuo, 2011; Lin and Kuo, 2007; Schuler and Jackson, 1987). The dimensions of the endogen variable of Organizational Performance was derived based on the earlier research of Huselid 1995; Delaney and Huselid 1996; Lopez 2006; Lin and Kuo 2007; Gurbuz and Mert 2011.

Regarding the development of the SEM, due to the given similarity in scope and setting the author opted to lean – amongst others - on the models of earlier research made by (Kuo, 2011; Lin and Kuo, 2007; Lopez, 2006) concerning the presupposed core connection between Organizational Learning and Organizational Performance. Furthermore the SEM takes into account the presupposed influence of HRM with a focus on the influence of Training & Development.

The figure below shows the Structural Equation Model (SEM) of the research project following the modeling suggestions by Buch (2007):

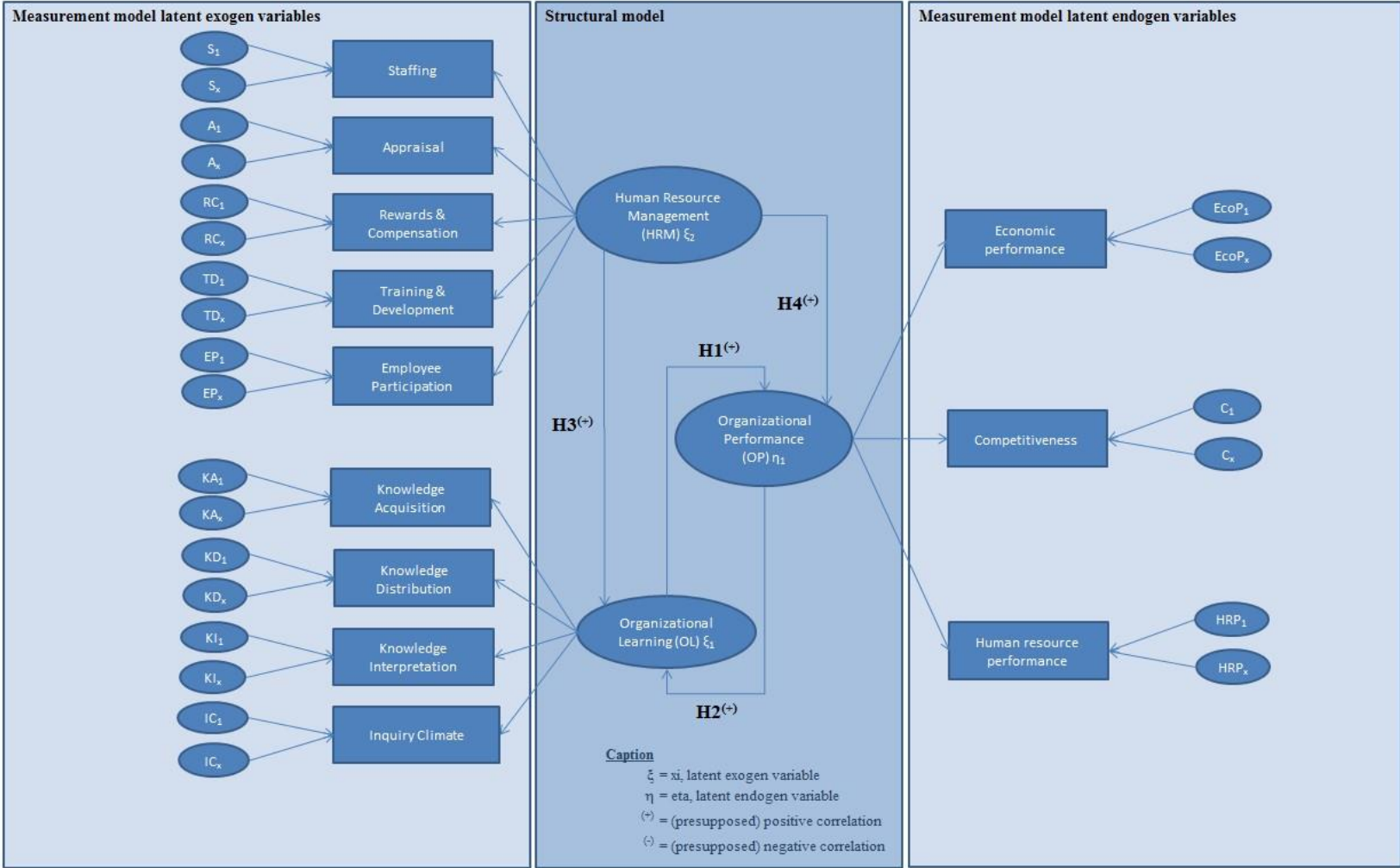


Figure 1: Structural Equation Model (SEM) of the research project

## Research Design

The research design is based on an empirical approach, defined by Black (1999, p. 3) as “*information, knowledge and understanding gathered through experience and direct data collection*”. As a first step it was the attempt of the author to sum up previous findings and experience in the field via a thorough research review as well as a pre-study of expert interviews. On these foundations direct data collection was used via the introduction of a survey.

As defined by Fink (2003, p. 1) “*surveys are systems for collecting information from or about people to describe, compare, or explain their knowledge, attitudes, and behaviour*.” For the current work an online survey with 35 questions was designed – the full questionnaire is provided in the appendix. Following the argument of Bradburn (2004) the “*precise wording of questions plays a vital role in determining the answers given by respondents*” all questions were designed to incorporate the largest possible target group of participants, e.g. the broad term “organization” was consistently used to address any form of business entity, instead of possibly narrowing the spectrum by using a term like “company” or “business”. Furthermore, in order to achieve “*a high response rate, accurate sampling and a minimum of interviewer bias*” a self-administered questionnaire was chosen, as suggested by Oppenheim and Oppenheim (1992; p. 103 in Sach, 2013). The implementation of the survey took place via e-mail, as participants were contacted and asked to participate in the survey via an attached link to the online questionnaire.

The questionnaire was developed in English and the final version of the questionnaire was translated into German language, as the survey took place in a German speaking country. The total sample was set at 2.363 as the sample size promised an acceptable base for causal-analytical research (cf. Backhaus et al. 2000, p. 493 in Siems 2003, p. 210). The data collection took place over a total period of approximately 8 months in five different provinces of Austria.

The total accomplished response rate of 8.0 per cent seems to be within a tolerable margin regarding previous research in that field, e.g. López et al. (2005) 7.8 per cent; Pablos (2002) 6.5 per cent. From that figure as well as the feedback from the review of the questionnaire it can be concluded that the questionnaire was adequate for the target group in terms of handling, length, and understandability and so forth.

## Measurement Model

Following the proceedings suggested by Siems (2003, p. 194 et seq.) regarding the developing of the measurement model, the abstract constructs of OL, HRM and OP deduced earlier are so-called latent variables which can, due to their multidimensionality, only be grasped by observing their different aspects. Measurement accordingly took place indirectly by looking at diverse indicators or items given in the appendix.

Within the causal analysis these partial models, e.g. of OL, are named measurement models. The measurement models for the three abstract constructs OL, HRM and OP were deduced based on previous research in the field and current standard of knowledge.

The developing of the data collection architecture took place by deduction as mentioned above in the context of the measurement model development for the three abstract constructs of: OL (9 items; Q1-Q9), HRM (12 items; Q10-Q21), and OP (8 items; Q22-Q29).

Most of these items were adopted from previous research work in the field. The remaining items were complemented by the researcher based on recommendations from scientific literature review as well as interviews with professionals and academics working in the field.

The measurement scale development was centered on a Likert Scale, as McLeod (2008) points out “*various kinds of rating scales have been developed to measure attitudes directly (i.e. the person knows their attitude is being studied). The most widely used is the Likert Scale*”. Likert-type or frequency scales are designed to measure attitudes or opinions by using given choices to respond (cf. Bowling, 2009; Burns and Grove, 1997).

Accordingly these ordinal scales measure levels of agreement/disagreement and assume that the strength/intensity of experience is linear, i.e. on a continuum from strongly agree to strongly disagree, and makes the assumption that attitudes can be measured (McLeod2008). In that sense it is a multiple point scale allowing the respondents to articulate how much they agree or disagree with a particular statement. Respondents in the current work were offered a four-point Likert Scale with no “neutral” value in an attempt to get more pointed results.

Based on these considerations measurement items were defined and phrased in statements. The evaluation took place along a four-point Likert-scale (cf. Likert, 1932) with one extra scale for non-applicable values (e.g. fully agree / mostly agree / mostly disagree / fully disagree / unknown to me or n/a ).

### **Development of the research procedure**

Leaning on the suggestions by Siems (2003, p. 211 et seqq.) a data analyzing procedure was conceptualized suitable for the specific hypothesis in the context. The development was based on the following reflections:

□ Organizational Performance (OP), Organizational Learning (OL) as well as Human Resource Management (HRM) are – as discussed already earlier – complex, latent and abstract constructs and their interdependencies are best measured via a causal analysis (Gözlner, 2014; Hammann and Erichson, 2000, p. 200; Homburg and Giering, 1996, p. 5 et seqq.).

□ The causal analysis is set up as a confirmatory analysis, i.e. in the first step a theoretical model is developed which is in a second step parameterized on the basis of the structure of the empirical data and evaluated according to “criteria of good quality” (Hammann and Erichson, 2000, p. 200 in Siems, 2003, p. 211). The confirmatory nature of the method, however, has to be qualified by the fact that the presumed structure of the SEM (Structure Equation Model) in the course of the analysis may be modified. (Homburg and Hildebrandt, 1998, p. 20; Jörgeskog, 1977, p. 273).

This is true for example for items eliminated because of weak reliability or the possible modification of the SEM by parameter expansion respectively contraction, i.e. the gradually inclusion or elimination of parameters (cf. Homburg and Hildebrandt, 1998, p. 30 et seq.).

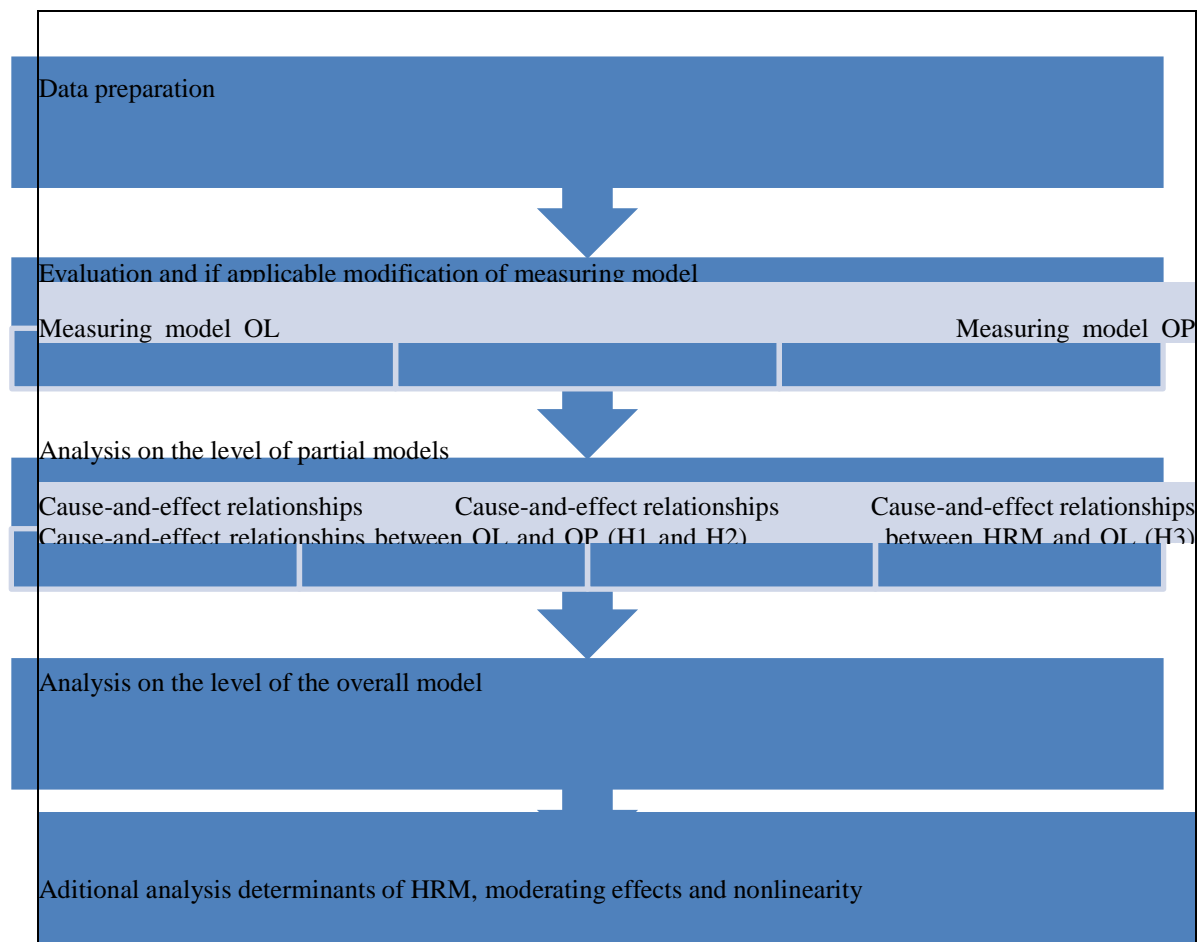
□ The "criteria of good quality" for measurement in social sciences are basically the objectivity, reliability and validity. In order to meet these criteria the procedure necessitates mainly two analyzing methods: first, factor analysis, i.e. finding out the loading or the strength of the connexion between items either within an abstract construct (e.g. HRM), parts of an abstract construct or between whole abstract constructs. Second, reliability analysis which will come as an inherent product of the factor analysis. (cf. Gözlner, 2014)

Grounded on the above considerations a successional procedure was introduced; starting at the lowest model level and ending at the overall model. This roadmap corresponds to the usual proceedings which is to first evaluate the measuring model and consecutively the structural model or SEM (Hammann and Erichson, 2000, p. 202).

Accordingly, following a commonly accepted stepping (Siems, 2003, p 212) of data preparation and examination of data quality, below in a first step the used measuring models was tested for their suitability using factor analysis as well as reliability analysis.

Thereafter several partial models were evaluated in analogy with the construction of the structural model respectively hypothesis development in order to localize possible deficits of validity.

Following the suggested approach of Siems (2003, p. 213) the figure below gives an overview of the single steps which are explained further below in conjunction with the evaluation of the data material:



**Figure 2: Overview of the approach of quantitative data analysis**

### Findings & Conclusions

Leaning on Siems (2003, p. 199 et seqq.) first of all the data set was examined for possible vertical and horizontal accumulations of missing values. The analysis was conducted – as most of the data analysis - in SPSS 19.0<sup>1</sup>. In the current dataset the highest figure for missing values occurs with the last question (Q34) with a percentage of 11.3 missing values. Also, values above 10.0 percent can be found only from Q24 onward indicating that the increase in missing values is due to the fact that respondents gradually dropped out of the survey all together but is not correlated with the underlying data (questions). Using the MCAR (“missing completely at random”) condition with the level of significance of 0.05 as reference for the given dataset (Sig. = 0.143) the significance level clearly was exceeded and it can be assumed that the missing values are indeed completely at random and the MCAR condition is met (cf. “IBM SPSS Missing Values 20,” 2011, p. 1 et seqq.).

The construct and data quality was evaluated - following the suggested proceedings by Siems (2003, p. 199 et seqq.) - using a reliability analysis where the suitability of the items to measure a scale was examined. First the three abstract constructs (OL, OP and HRM) were evaluated separately and hereinafter the overall model. In doing so the usual threshold value of the Cronbach’s Alpha of 0,70 (cf. Siems 2003, p. 200) was imposed. In the case of HRM a Cronbach’s Alpha of 0,856 was reached directly, i.e. without elimination of any items and can therefore be considered internally consistent. For OL a Cronbach’s Alpha of 0,850 was reached directly and in the case of OP a Cronbach’s Alpha of 0,874 was reached directly, i.e. without elimination of any items. For the overall model a Cronbach’s Alpha of 0,878 was reached directly (Q1 to Q34) and can therefore be considered internally consistent. Furthermore, the ‘Cronbach’s Alpha if Item Deleted’ shows that by elimination of any item Cronbach’s Alpha could not be increased significantly. Consequently all the partial models as well as the overall model were considered internally consistent and suitable for further analysis. A set of the full tables is given in the appendix.

In the following step the aim was an analysis accounting for the variance including that one found in the correlation coefficients and error variance, and was therefore set up as a principal components analysis respectively factor analysis, as a factor analysis is a method of data reduction (Institute For Digital Research and Education, 2014) by seeking

underlying unobservable (latent) variables that are reflected in the observed variables (manifest variables), in order to reduce the complexity of the data structure. Accordingly, an exploratory factor analysis was carried out, which is suitable for a situation without a predefined idea of the structure or how many dimensions are in a set of variables (Torres- Reyna, 2014).

The principal components analysis has been conducted in three major steps:

1<sup>st</sup> Step: Assessment of suitability of data

2<sup>nd</sup> Step: Component extraction

3<sup>rd</sup> Step: Factor rotation and interpretation

1<sup>st</sup> Step: Factor analysis is based on the correlation matrix of the variables involved, and correlations usually need a large sample size before they stabilize reduction (Institute For Digital Research and Education, 2014). Citing the advice by Comrey and Lee (1992 in Tabachnick and Fidell, 2001, p. 588) in that respect regarding the sample size: 50 cases is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 or more is excellent. Furthermore, as a rule of thumb, a bare minimum of 10 observations per variable is necessary to avoid computational difficulties (Institute For Digital Research and Education, 2014). The total sample size was 177 cases and therefore within the tolerable margin.

To determine the factorability of the correlation matrix displaying the relationships between individual variables Tabachnick and Fidell (2007) recommended inspecting the correlation matrix for correlation coefficients over 0,30 (see also e.g. Hair et al. 1995) and items with loadings below that threshold were eliminated for each partial model respectively component, i.e. HRM: Q4; OP: Q29 and OL: Q10, Q16 and Q19.

Following a frequently used suggestion (cf. University of Texas at Austin, 2014) communalities for each variable greater than 0,50 were retained. Variables that were not meeting that criterion were eliminated in an iteration loop. Values less than 0,5 indicate that the item does not fit well with the other items in its component. By eliminating these items the explanatory power of the analysis improves, as the percentage of total variance explained increased. Regarding the threshold value items were excluded as follows: HRM: Q3, Q5 and Q9; OL: Q11, Q20 and Q21.

Using the widely accepted Kayser-Meyer-Olkin (KMO) Measure of Sampling Adequacy as an index to examine the appropriateness of factor analysis for the data set high values between 0,5 and 1,0 indicate that a factor analysis is appropriate (cf. for example Tabachnick and Fidell, 2001). For the set of remaining variables in the total sample the values were well above the threshold (HRM: 0.826, OL: 0.828 and OP: 0.839).

Furthermore the Bartlett's Test of Sphericity should be significant ( $p < 0,05$ ) for factor analysis to be suitable (cf. Hair et al., 1995 or Tabachnick and Fidell, 2001). As the sig. for the sample for all components was 0.000 this criterion was met.

2<sup>nd</sup> Step: in order to derive valid components all the remaining items selected in the process described above were subject to further analysis of the overall model as elaborated below:

Principal component analysis are a way of testing the construct validity, as suggested before (Bachman 1990, pp. 262-263 ;Brown, 1996, p. 246 or 1999, p. 281). In order to arrive at a convergent validity (i.e., the similar tests load together) a series of tests was administered and those tests that logically should be related turned out to load on the same factor, while tests that would logically be less related load on different factors.

In that sense a number of approaches was used for deciding on the number of factors (or rather components) to include (cf. Gorsuch, 1983, pp. 164-171). In the current work the author used three common approaches: Kaiser criterion; Scree plot, and Parallel analysis.

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<sup>1</sup> SPSS = Statistic Package for Social Sciences



The Kaiser criterion is centered on the so-called eigenvalue which a given factor measures the variance in all the variables which is accounted for by that factor. As in factor analysis, eigenvalues are used to condense the variance in a correlation matrix, *"the factor with the largest eigenvalue has the most variance and so on, down to factors with small or negative eigenvalues that are usually omitted from solutions"* (Tabachnick and Fidell, 1996, p. 646).

As a widely accepted threshold (see for example Lance and Vandenberg, 2009) an eigenvalue of 1,00 or higher is recommended. The Total Variance Explained table outlines 4 components with sufficient loadings. Nonetheless, the other approaches used in the selection process can provide overriding reasons for selecting other numbers of factors (Gorsuch, 1983, pp. 164-171).

Total Variance Explained			
Component	Total Variance	% of Variance	Cumulative %

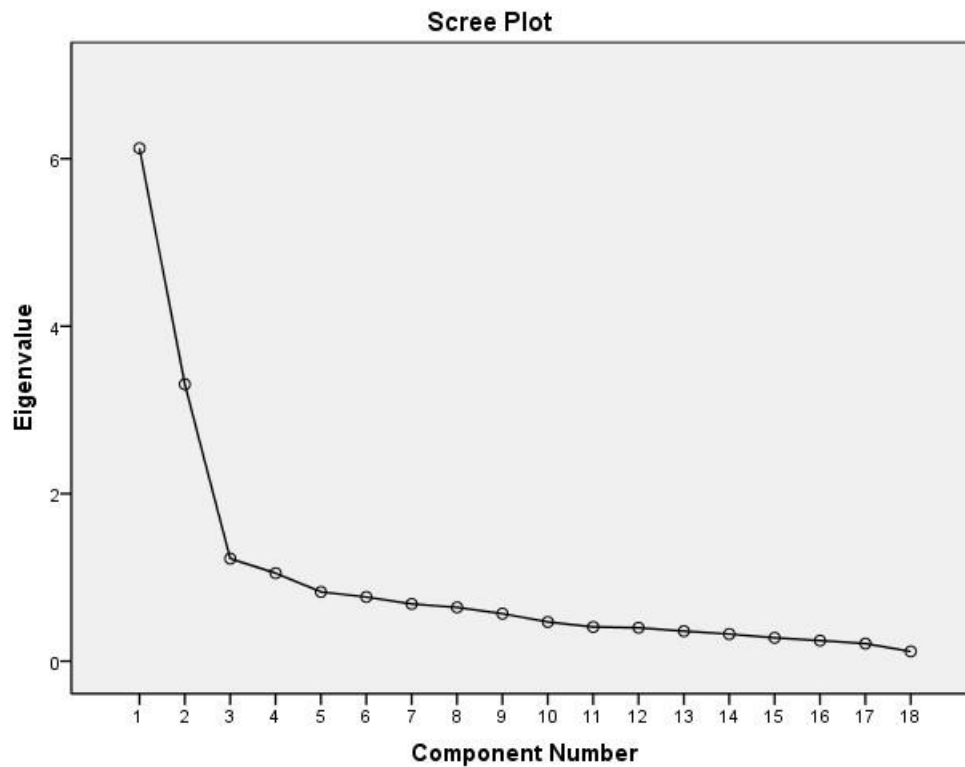
T Extraction Sums of Squared Rotation Sums of Squared Loadings<sup>a</sup>

	T Extraction			Sums of Squared Rotation			Sums of Squared Loadings <sup>a</sup>		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,125	34,027	34,027	6,125	34,027	34,027	4,708	26,148	26,148
2	3,306	18,367	52,395	3,306	18,367	52,395	3,446	19,015	45,163
3	1,224	6,802	59,197	1,224	6,802	59,197	4,699	25,817	70,980
4	1,051	5,840	65,037	1,051	5,840	65,037	2,979	16,838	77,818
5	,827	4,595	69,632						
6	,766	4,256	73,888						
7	,683	3,796	77,684						
8	,642	3,567	81,250						
9	,567	3,149	84,400						
10	,468	2,602	87,002						
11	,409	2,271	89,273						
12	,399	2,218	91,490						
13	,358	1,990	93,481						
14	,324	1,798	95,278						
15	,279	1,549	96,827						
16	,245	1,362	98,189						
17	,210	1,167	99,356						
18	,116	,644	100,000						

Extraction Method: Principal Component Analysis. a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Table 1: Total Variance Explained**

The Scree Plot shows the proportion of variance for each principal component. The principal components are sorted in decreasing order of variance, so the most important principal component is always listed first. Generally, components on the ‘steep slope’ or before the ‘elbow’ are retained as the ones on the ‘shallow slope’ contribute little to the solution. Accordingly, the Scree Plot justifies the retention of only two components.



**Figure 3: Scree Plot**

As third approach a parallel analysis was conducted to systematically compare the obtained Eigenvalues of the sample data against a randomly generated set of Eigenvalues. Following the suggestions given by (Patil et al., 2007) components should be retained if the Eigenvalue from the sample data is greater than the one from the randomly generated data set. In this case the results from two independent parallel analysis – see appendix - suggest keeping the first two components.

Taking into consideration the different approaches of the principal components analysis two components were retained to grasp the connection between Organizational Learning and Organizational Performance, as suggested by the scree plot and the parallel analysis. This procedure seems to be in line with the commonly accepted scientific approach described by Abidi (2004 in Lewis-Beck et al., 2004): *“In general, only a (small) subset of factors is kept for further consideration and the remaining factors are considered as either irrelevant or nonexistent (i.e., they are assumed to reflect measurement error or noise).”*

3rd Step: The next stage of data interpretation is the factor rotation to determine the suitability of the before mentioned (2 component) solution. Most of the rationale for rotating factors was put forward by Thurstone (1947) who advocated its use because this procedure simplifies the factor structure and therefore makes its interpretation easier and more reliable (i.e., easier to replicate with different data samples). Going more into detail three parameters were scrutinized: Pattern Matrix, Total Variance Explained; Component Correlation Matrix.

Giving the components meaning: Systematically analyzing the Pattern Matrix (see appendix) for variables with loadings of 0.5 or higher on the respective component, the clustering unearthed the following components: ‘Development Readiness’ and ‘Dynamic Business Position’. For the given data set 52.395% of the total correlations are explained by the 2 components solution, as shown in the Total Variance Explained table above. The Component Correlation Matrix shows the strength in the relationships between the components. Despite the original hypothesis the Correlation Matrix shows a low correlation (0.137) between ‘Development Readiness’ as placeholder for Organizational Learning and ‘Dynamic Business Position’ as placeholder for Organizational Performance.

This preliminary analysis of the given dataset therefore suggests that OL and OP are not necessarily causally linked with each other, despite a vast amount of research supporting this connection. A meta-analysis - the author makes no claim to being complete - found that roughly 75% per cent (49 cases) of the examined scientific works over roughly the last two decades fully support the view that OL and OP are directly and positively linked to each other, whereas only 8% (5 cases) disagreed and 17% (11 cases) only partly agreed – see appendix.

To clarify the results from the factor analysis a partial multiple regression analysis was conducted for the partial model of OL. The outcomes suggest that the model – as derived above based on earlier research – does not depict a coherent concept given the table of excluded variables (see appendix).

The assumption of OL being coherent holistic concept therefore should be questioned. Nonetheless, the results support the hypothesis that single items of OL (e.g. Q20. “Making suggestions about internal improvements and innovations is common within your organization.”) significantly contribute to Organizational Performance (e.g. “The organizations business situation is better than sectoral average.”).

Further analysis of the dataset, also using different analytical methods, is suggested to substantiate respectively explain this outcome in the light of previous findings.

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## Appendix

### Item selection

Placeholder	Dimension	Factor	Item
Q10	OL	KA	Research and development (R&D)
Q11	OL	KA	Innovation
Q12	OL	KA	Professional competencies
Q13	OL	KD	Information flow
Q14	OL	KD	Sharing of knowledge
Q15	OL	KD	Strategies and aims
Q16	OL	KI	Committed
Q17	OL	KI	Opportunities to learn
Q18	OL	KI	Teamwork
Q19	OL	IA	Active involvement in development
Q20	OL	IA	Active suggestions
Q21	OL	IA	Attitude towards processes of change

**Table 2: OL Items**

Placeholder	Dimension	Factor	Item
Q1	HRM	S	Use of HR measures
Q2	HRM	S	Strategic workforce planning
Q3	HRM	S	Employer Branding
Q4	HRM	A	Appraisal evaluations
Q5	HRM	RC	Performance-oriented remuneration system
Q6	HRM	TD	Leadership development
Q7	HRM	TD	Vocational Education and Training (VET)
Q8	HRM	TD	Further education and training
Q9	HRM	EP	Employee involvement

**Table 3: HRM items**

Placeholder	Dimension	Factor	Item
Q22	OP	EcoP	Business situation
Q23	OP	EcoP	Turnover development
Q24	OP	EcoP	Profit development
Q25	OP	C	Reputation
Q26	OP	C	Customer loyalty
Q27	OP	C	Change processes
Q28	OP	HRP	Employee satisfaction
Q29	OP	HRP	Employee attraction

**Tabelle 1: Items OP****Reliability analysis****HRM****Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,856	,859	9



**Table 4: Reliability Statistics HRM****OL****Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,850	,859	12

**Table 5: Reliability Statistics OL****OP****Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,874	,873	8

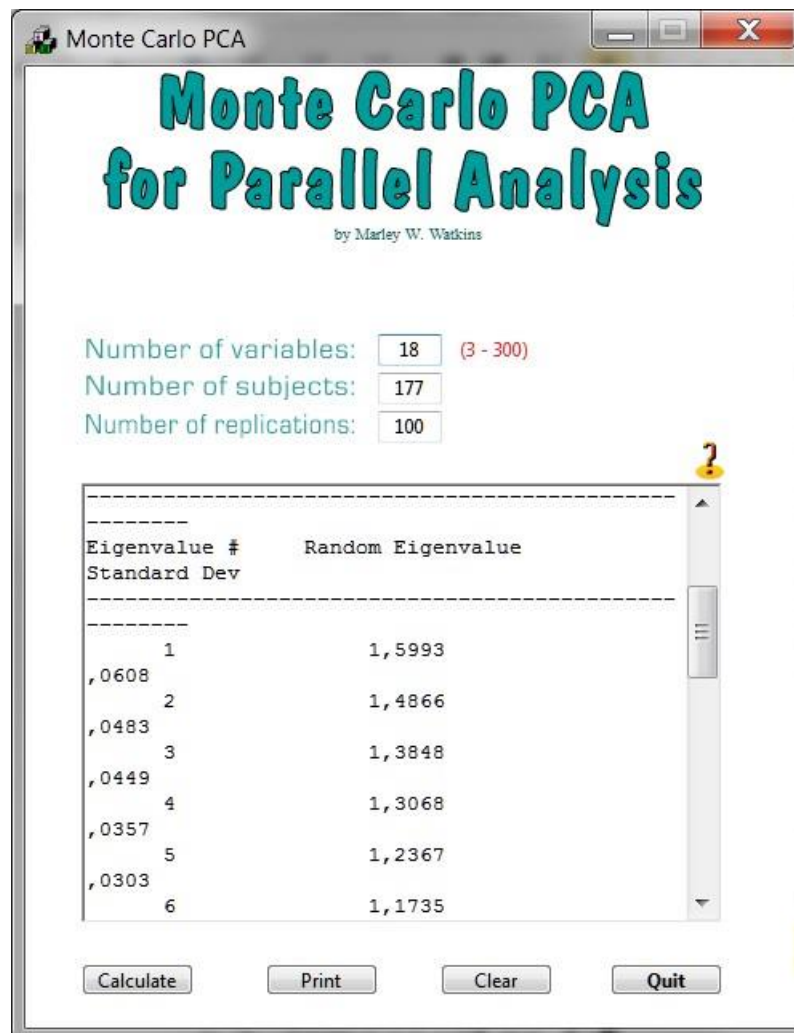
**Table 6: Reliability Statistics OP****Overall model****Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,878	,912	34

**Table 7: Reliability Statistics overall model**

**Factor analysis**

## Parallel Analysis

**Figure 4: Parallel Analysis – Monte Carlo PCA**

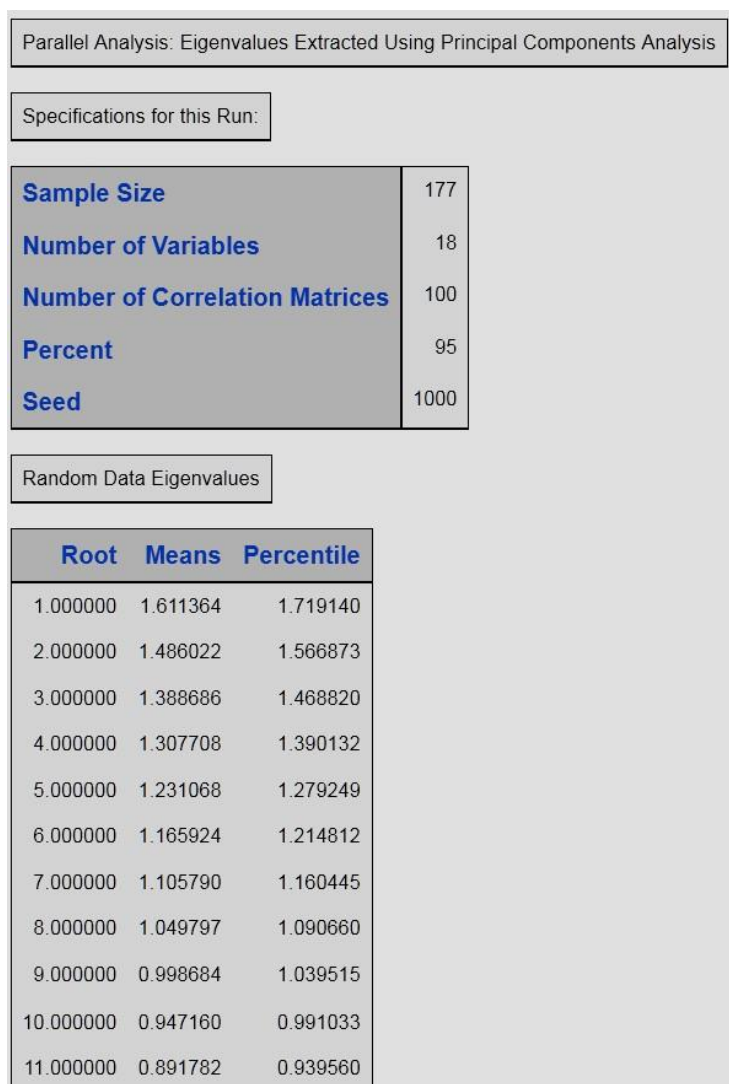


Figure 5: Parallel Analysis - <http://smishra.faculty.ku.edu/parallelengine.htm>

Component Correlation Matrix

**Component Correlation Matrix**

Component	1	2	3	4
1	1,000	,137	-,565	-,159
2	,137	1,000	-,123	-,345
3	-,565	-,123	1,000	,189
4	-,159	-,345	,189	1,000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

**Table 8: Component Correlation Matrix**

## Pattern Matrix

Component 1:

Q5	0,683	The organization's reward policies are performance-linked.
Q9	0,701	Employees (i.e. non-management) are involved in decision processes; for example when establishing strategic plans or discussing new policies.
Q12	0,675	Employees in your organization actively improve their professional competencies.
Q13	0,754	Information about the latest innovations and changes in the organization is continuously given to the staff.
Q14	0,821	The sharing of knowledge and experience is common within your organization (e.g. by sharing best-practices).
Q15	0,679	Employees are informed about the strategies and aims of the organization.
Q17	0,601	There are opportunities to learn (e.g. visit to other parts of the organization, internal training programs, etc.) so as to make employees aware of the different duties within the organization.
Q18	0,701	Teamwork is a very common practice in the company.
Q27	0,781	The organization handles changes and changing conditions in its environment better than sectoral average.
Q29	0,652	It is easier for the organization to find qualified work force for vacant positions (e.g. skilled worker positions, apprenticeships etc.) than it is on sectoral average.
COMPONENT LABEL		<b>"Development Readiness"</b>

Component 2:

Q23	0,912	The development of the organizations turnover/volume of sales is better than sectoral average.
Q24	0,910	The development of the organizations' profits is better than sectoral average.
Q22	0,838	The organizations business situation is better than sectoral average.
COMPONENT LABEL		<b>"Dynamic Business Position"</b>

**Meta-analysis: Research history on the connection between OL and OP**

Author	Title	Agreement with	author hypothesis categorization		
(year of publication)			FA	PA	DA
			<b>FA = full agreement</b> <b>PA = partly agreement</b>		
Huselid (1995)	The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance	FA			
(Becker and Gerhart, 1996)	The Impact of Human Resource Management on Organizational Performance: Progress and Prospects		PA		
(Guest, 1997)	Human Resource Management and Corporate Performance in the UK	FA			
(Baker and Sinkula, 1999)	The synergistic effect of market orientation and learning orientation on Organizational Performance	FA			
(Goh, 2001)	THE LEARNING ORGANIZATION: AN EMPIRICAL TEST OF A NORMATIVE PERSPECTIVE				DA
(Bontis, N., 2002)	IT competency and firm performance: is organizational learning a missing link?	FA			
(Calantone et al., 2002)	Learning orientation, firm innovation capability, and firm performance	FA			
(Brockman and Morgan, 2003)	The Role of Existing Knowledge in New Product Innovativeness and Performance	FA			
(Guest et al., 2003)					DA
(Heeseok Lee and Byounggu Choi, 2003)	Knowledge Management Enablers, Processes, and Organizational Performance: An Integrative View and Empirical Examination		PA		
(Hult et al., 2003)	Organizational learning as a strategic resource in supply management	FA			
(Jashapara, 2003)	Cognition, culture and competition: an empirical test of the learning organization	FA			
(Tippins and Sohi, 2003)	IT competency and firm performance: is organizational learning a missing link?	FA			
(Hartog and Verburg, 2004)	High performance work systems, organisational culture and firm effectiveness		PA		
(Yang et al., 2004)	The construct of the learning organization: Dimensions, measurement, and validation	FA			
(Fernandes et al., 2005)	Resources that drive performance: an empirical investigation				DA
(Hoffman et al., 2005)	Social capital, knowledge management, and sustained superior performance		PA		
(Kontoghiorghes et	Examining the relationship	FA			

al., 2005)	between Learning Organization (LO) characteristics and change adaptation, innovation, and Organizational Performance			
(López et al., 2005a)	Organizational Learning as a determining factor in business performance	FA		
(Galbreath and Galvin, 2006)	Accounting for performance variation: how important are intangible resources?		PA	
(García-Morales et al., 2006)	Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship	FA		
(Hanvanich, 2006)	The Relationship of Learning and Memory With Organizational Performance: The Moderating Role of Turbulence	FA		
(Khandekar and Sharma, 2006)	Organizational Learning and performance: Understanding Indian scenario in present global context	FA		
(Keskin, 2006)	Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model	FA		
(Marqués and Simón, 2006)	The effect of knowledge management practices on firm performance	FA		
(Prieto and Revilla, 2006)	Assessing the Impact of Learning Capability on Business Performance: Empirical Evidence from Spain	FA		
(Ruiz-Mercader et al., 2006)	Information technology and learning: Their relationship and impact on organisational performance in small businesses	FA		
(Spicer, 2006)	Organizational Learning in Smaller Manufacturing Firms	FA		
(Wu and Cavusgil, 2006)	Organizational learning, commitment, and joint value creation in interfirm relationships	FA		
Chen (2007)	The effect of organizational change readiness on organizational learning and business management performance	FA		
Lin and Kuo (2007)	The mediate effect of learning and knowledge on Organizational Performance	FA		
(Jiang and Li, 2008)	The relationship between Organizational Learning and firms' financial performance in strategic alliances: A contingency approach	FA		
(Flores, L., Catalanello, R., Rau, D., Saxena, N., 2008)	Organizational learning as a moderator of the effect of strategic planning on company performance	FA		

(Jiménez-Jimenez et al., 2008)	Fostering innovation: The role of market orientation and organizational learning	FA		
(Lin et al., 2008)	The innovativeness effect of market orientation and learning orientation on business performance	FA		
(Rhodes et al., 2008)	An integrative model of organizational learning and social capital on effective knowledge transfer and perceived organizational performance	FA		
(Wang, 2008)	Entrepreneurial Orientation, Learning Orientation, and Firm Performance	FA		
(Hsu, Y.-L., Lee, C.-H., Chih, W.-H., Chiu, T.-Y., 2009)	Organizational learning as an intervening variable in the life insurance industry	FA		
(Kodjo and Changjun, 2009)	HRM Practices and Organizational Performance: An Empirical Analysis	FA		
(Rose, Raduan Che, Naresh Kumar, and Ong Gua Pak, 2009)	The Effect Of Organizational Learning On Organizational Commitment, Job Satisfaction And Work Performance	FA		
(Weldy, 2009)	Learning Organization (LO) and transfer: strategies for improving performance		PA	
(Zack et al., 2009)	Knowledge management and Organizational Performance: an exploratory analysis	FA		
(Hung et al., 2010)	Dynamic capability: Impact of process alignment and organizational learning culture on performance		PA	
(Wu, C., Fang, K., 2010)	Improving project performance through organizational learning: an empirical study	FA		
(Gurbuz and Mert, 2011b)	Impact of the strategic human resource management on organizational performance: evidence from Turkey	FA		
(Kuo, 2011)	How to improve Organizational Performance through learning and knowledge?	FA		
(Mills and Smith, 2011)	Knowledge management and Organizational Performance: a decomposed view	FA		
(Mottaleb and Sonobe, 2011)	An Inquiry into the Rapid Growth of the Garment Industry in Bangladesh	FA		
(Palacios-Marques et al., 2011)	The Effect of Learning-Based Distinctive Competencies on Firm Performance: A Study of Spanish Hospitality Firms	FA		
(García-Morales et al., 2012)	Transformational leadership influence on organizational performance through organizational learning and	FA		

	innovation.			
(Dasgupta, 2012)	Conceptual Paper: Organizational Learning and Its Practices	FA		
(Goh et al., 2012)	The relationship between learning capability and Organizational Performance: A meta-analytic examination		PA	
(Saunila, 2012)	A conceptual framework for the measurement of innovation capability and its effects		PA	
(Park et al., 2014)	Learning organization and innovative behavior: The mediating effect of work engagement	FA		
(Tseng and Lee, 2014)	The effect of knowledge management capability and dynamic capability on organizational performance		PA	
(Rowland and Hall, 2014)	Management learning, performance and reward: theory and practice revisited			DA
(Mansour et al., 2014)	Getting inside the black box: HR practices and firm performance within the Tunisian financial services industry	FA		
(Theriou and Chatzoglou, 2014)	The impact of best HRM practices on performance – identifying enabling factors	FA		

**Table 9: Research history on the connection between Organizational Learning (OL) and Organizational Performance**

(OP)

Multiple regression – partial model OL

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.226 <sup>a</sup>	.051	.045	1,363	.051	8,023	1	149	.005

a. Predictors: (Constant), Q20. Verbesserungsvorschläge zu machen und Innovationen voranzutreiben ist in Ihrer Organisation möglich.



**Table 10: Model Summary**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14,907	1	14,907	8,023	,005 <sup>a</sup>
	Residual	276,842	149	1,858		
	Total	291,748	150			

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14,907	1	14,907	8,023	,005 <sup>a</sup>
	Residual	276,842	149	1,858		
	Total	291,748	150			

a. Predictors: (Constant), Q20. Verbesserungsvorschläge zu machen und Innovationen voranzutreiben ist in Ihrer Organisation möglich.

b. Dependent Variable: Q22. Die wirtschaftlichen Situation der Organisation ist besser als im Branchendurchschnitt.

**Table 11: ANOVA**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,835	,259		7,097	,000
	Q20. Verbesserungsvorschläge zu machen und Innovationen voranzutreiben ist in Ihrer Organisation möglich.	,328	,116	,226	2,832	,005

a. Dependent Variable: Q22. Die wirtschaftlichen Situation der Organisation ist besser als im Branchendurchschnitt.

**Table 12: Coefficients****Excluded****Variables**

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Q10. Auf Forschungs- und Entwicklungsmaßnahmen wird größtenteils Wert gelegt.	,108 <sup>a</sup>	1,213	,227	,099	,803
	Q11. Die internen Systeme und Abläufe unterstützen Innovationen.	,000 <sup>a</sup>	-,002	,999	,000	,822
	Q12. Die Mitarbeiter in Ihrer Organisation versuchen aktiv ihre berufsbezogenen Kompetenzen zu verbessern.	,047 <sup>a</sup>	,556	,579	,046	,901

Q13. Die Mitarbeiter erhalten laufend Informationen über aktuelle Neuerungen und Änderungen in der Organisation.	,034 <sup>a</sup>	-,386	,700	-,032	,845
Q14. Wissen und Erfahrungen miteinander zu teilen ist in Ihrer Organisation üblich (z.B. die Weitergabe von Best-practice-Beispielen optimalen Lösungsansätzen und Erfolgsmodellen).	,044 <sup>a</sup>	,489	,625	,040	,802
Q15. Die Mitarbeiter werden über die Strategien und Ziele der Organisation informiert.					
Q16. Alle Mitarbeiter Ihrer Organisation haben die selben Ziele denen sie sich verpflichtet fühlen.	,052 <sup>a</sup>	,604	,547	,050	,848
Q17. Es werden Möglichkeiten angeboten (z.B. Besuche in anderen Abteilungen interne Trainingsprogramme etc.) um die Mitarbeiter mit den verschiedenen Aufgabenbereichen in der Organisation vertraut zu machen.	-,002 <sup>a</sup>	-,018	,985	-,002	,903
Q18. Teamarbeit (i.e. koordinierte Zusammenarbeit) ist in der Organisation üblich.	,079 <sup>a</sup>	,926	,356	,076	,878
Q19. Die Mitarbeiter Ihrer Organisation beschäftigen sich aktiv mit der aktuellen Marktsituation und damit zusammenhängend neuen Entwicklungen.					
Q21. Die Mitarbeiter haben eine positive Grundhaltung zur laufenden Weiterentwicklung der Organisation.	-,040 <sup>a</sup>	-,460	,646	-,038	,858
	,137 <sup>a</sup>	1,628	,106	,133	,895
	,124 <sup>a</sup>	1,424	,157	,116	,840

a. Predictors in the Model: (Constant), Q20. Verbesserungsvorschläge zu machen und Innovationen voranzutreiben ist in Ihrer Organisation üblich.

b. Dependent Variable: Q22. Die wirtschaftlichen Situation der Organisation ist besser als im Branchendurchschnitt.

**Table 13: Excluded Variables**