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German-Sino aspects of management

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Elmar E. Schmitz

FOM Hochschule
German-Sino School of Business & Technology

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Address by the Rector of FOM Hochschule

Since the start of our German-Sino higher education program in management in 2002 the economic relations between China and Germany have increased significantly. More than 10 years ago China was already an important and highly-valued partner for the German economy, but the relations have since evolved into an even greater success story. Today, over 5.000 German companies operate in China and the country is the fifth biggest buyer of German exports, which emphasizes the importance of the bilateral relations.

Since its establishment, FOM Hochschule für Oekonomie & Management has been working towards the internationalization of higher education. Its special focus has always been on one core principle: to offer a practical and application-based education and thus to provide students with professional competence and methodological skills. These skills also include intercultural competence which makes our students very attractive for international employers. The FOM German Sino School of Business & Technology is thoroughly dedicated to these ideas. Its students are educated both in China and in Germany. Therefore they are encountering impressive opportunities on both labour markets. But all of these achievements would not have been possible without our very close and distinguished partner universities in China, the Shanxi University of Finance & Economics in Taiyuan and the Shandong Agricultural University in Tai'an.

FOM was the first university in North Rhine-Westphalia to receive the quality seal of the German Council of Science and Humanities in 2004. This is the country's highest science policy advisory body to the Federal Government and state governments. The German Council of Science and Humanities emphasized that it is fully convinced of the high quality of the university's overall study concept and of the single programmes. It therefore confirmed its assessment with the re-accreditation of FOM in 2010.

Our quality concept enables us to react quickly and competently to a changing market demand by developing new and innovative study programmes. This competence that initially found its roots in a strong management expertise has in the meantime been extended to the field of engineering. The FOM School of Engineering offers a whole set of Bachelor and Master degrees for students who want to graduate in general engineering, mechatronics, renewable energies, electrical technologies or information technologies. For the near future it is planned to meet the increasing Chinese demand for engineering specialists by offering a target-group-specific intercultural bachelor program in engineering.

We are very honoured to be part of a vivid academic exchange with our Chinese partner universities. Shandong Agriculture University and FOM have jointly managed now for more than ten years to educate, to professionalize and to internationalize young Chinese adults who proved after their studies that professional success is a combination of excellent education, diligence and personality. Therefore we are genuinely grateful that this cooperation can contribute to the mutual understanding between China and Germany. Bearing this in mind I would like to deeply thank all our friends at Shandong Agriculture University for their daily efforts to keep our common vision alive!

Finally, my special thanks go to my dear collegue, Prof. Dr. Elmar E. Schmitz, who once again edits an exciting, valuable and truly international Sino-German publication in English language. So let us all join and intensify the academic exchange!

Essen, June 2014

Prof. Dr. Burghard Hermeier
Rector of FOM Hochschule

Preface by the editor

Quality-oriented concepts of university education nowadays aim at the internationalization of research and international research transfer. This development is a reflex of internationalized and multi-cultural study programs that also support the perception and the integration of cross-border research clusters.

More than ten years ago a joint study program of Shandong Agriculture University, Taian / PR China, and FOM Hochschule, Essen / Germany, came into existence. The high acceptance of the international study programs made student numbers grow significantly over the years. As a consequence in the meantime more than 2.000 students have graduated from the various German-Sino bachelor programs of FOM Hochschule.

Looking straight into the future the set of joint study programs is meant to be extended. Not only business studies shall increase the supply of management staff on the German-Sino labour market, but also engineering studies shall build a bridge between China's eager ambitions to transform into a modern innovative production site and Germany's expertise on high technology.

Exchange and mutual learning is the foundation of a peaceful internationalization process. The idea for this collection of essays from Chinese and German professors of SDAU and FOM came up in the course of the decennial of the joint study programs in October 2013 in Taian. It is meant to encourage the academic exchange and to enrich the intensive cooperation between the two universities that has been built upon both the high-level university education of students and on modern transfer-oriented research.

I would like to thank all of my Chinese and German colleagues who contributed to this publication by letting us share their current activities in research. Last but not least I would like to thank the members of the FOM China team for their coordination support and Kai Stumpp and his team at the publishing house for formatting, finalizing and printing the book in hand.

Essen, June 2014

Prof. Dr. Elmar E. Schmitz
Academic Director of the German-Sino School of Business & Technology of FOM Hochschule

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Part 1 Financial Management

A Measuring value-performance of listed stocks in China and Germany

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Abstract

Since the epoch-making publication of Rappaport the ambitious Blue Chip-companies worldwide listed at matured stock exchanges in the late 80s have unsolicited started to report about Value-Concepts over and above the mandatory notes in their Annual Reports (IFRS-/GAAP-data). As the companies design their Value-Concepts very individually, wherewith actually comparisons of the Value-Performance are unfeasible, herewith a new standardised approach is introduced first to determine the Value-Performance of companies and second to compare the results quantitatively. To assess the relation between changes in Value-Performance (Value Added or Value Destroyed) on the one hand and changes of Share Prices on the other hand the ratio Price-Value-Ratio cfrv (PVR cfrv) has been introduced. Analogous to the ratio Price-Earnings-Ratio (PER) that for years is used to try recommendations with respect to decisions of Buy, Hold, or Sell the PVR cfrv allows an additional evaluation with better accuracy about the attractiveness of the companies' shares on the basis of their Value-Performance (first time DAX30 and HangSeng50). This developed standardized approach now could be rolled out for measurement and evaluation of Value-Performance onto other Stock Exchanges and Share-Indices of all leading Stock-Exchanges worldwide, executed and published periodically. Thus, the market transparency could be increased and more decision-useful information could be addressed to the Financial Community.

Keywords

Price-Earnings-Ratio, Price-Value-Ratio, Value Added, Value-Performance

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1 Introduction

Since the end of the 80s the Blue Chip-Companies listed at the matured Stock Exchanges worldwide publish information about used Value-Concepts in their Annual Reports more or less detailed voluntarily and additionally to the mandatory IFRS-/US-GAAP-notes. These information are based on the first time in 1986 by Rappaport[2] published Shareholder Value-Concept and are intended to increase the quality of business performance at stock listed companies. Therewith, additional information above the worldwide obligatory Annual Reports applying the international accounting like IFRS (International Financial Reporting Standards) resp. US-GAAP (United States-Generally Accepted Accounting Principles) should be given to the players of the International Financial Markets to increase the decision usefulness. The main objective of this unsolicited information is to demonstrate the quality of corporate management and to increase the attractiveness of esp. equity instruments (shares), but as well of debt instruments (bonds) simultaneously. The positive effects of increasing attractiveness and actually higher demand for shares and bonds are higher market capitalisations that theoretically reduce the thread of so-called hostile take-overs as well as costs of capital of each company.

As the companies have designed their individual Value-Concepts according to their individual business models, a comparison of the Value-Performance of the companies among each other on the basis of the information published in their Annual Reports is less meaningful resp. impossible. To change this dissatisfying situation a standardised approach could be helpful to analyse, calculate, and assess the Value-Performance of companies, autonomously of the individual Value-Concepts. Over the past few years such an approach has been developed and actually first time executed. First started with time-consuming data-collection directly out of Annual Reports now Bloomberg-data complemented by additional data acquisition are used to assess and illustrate the Value-Performance of DAX30- and HangSeng50-companies. The Value Added resp. the Value Destroyed is calculated on the basis of the interest-bearing capital and as much as possible on the basis of the reported data applying IFRS.

2 Cf. Alfred Rappaport: Creating Shareholder Value, New York 1986.

Consecutively, this new and comprehensive approach will be first introduced through the explanatory comparison between the Profit-/Loss-Concept dominant in accounting and the actually outplaying Value-Concept (Chapter 2). Additionally, the chosen proceeding to assess Value-Performance will be presented as 'White Box'-cfrv. Therein the relevant players, the practical implementation of the standardised calculation, as well as the reporting of identified results including further fields of analyses will be explained. The first results of the analyses will be illustrated with a Ranking of the DAX30- and HangSeng50-companies for the fiscal year 2012 ordered by the calculated ratio Value-Rate cfrv that pictures the relative Value-Performance (Chapter 3). To assess the calculated performance in relation to the share price of each company the new ratio Price-Value-Ratio cfrv (PVR cfrv) will be introduced and calculated. Analogous to the Price-Earnings-Ratio (PER) already well-known in the world of finance the new ratio Value-Ratio cfrv (PVR cfrv) will allow a Ranking of the considered DAX30- and HangSeng50-companies where the Value-Performance is directly related to the share price. The effects of the better accuracy of the PVR cfrv against the PER will be illustrated by the shift in the recommendation to investor's decision about Buy, Hold, or Sell for both DAX30- and HangSeng50-companies. According to the foregoing separate analyses of the DAX30 and HangSeng50 the companies of both indices will be combined and considered as one group, where again the Value-Rate cfrv, the Price-Value-Ratio cfrv and the shift of results recommending Buy, Hold, or Sell between PER and PVR cfrv is illustrated and commentated (Chapter 4). Finally, the most significant results will be summarised and an outlook to roll out the new approach into further fields of analyses and onto further indices of the stock exchanges worldwide will be given.

2 Value- Concept and 'White Box'-cfrv

2.1 Value-Concept versus Profit/Loss-Concept

Since the epoch-making publication of Alfred Rappaport ‚Creating Shareholder Value' in 1986[3] the world of finance has changed dramatically. This is why in the late 80s the ambitious Blue Chip-companies worldwide listed at matured stock exchanges have unsolicited started to report about Value-Concepts over and above the mandatory notes in their Annual Reports (IFRS-/GAAP-data).[4] Meanwhile the voluntary given so called Non-IFRS-/Non-GAAP-data about the direction of corporate governance, the compensation of the management, and the achievement of objectives on the basis of Value-Concepts are an inherent part of the TOP-companies worldwide.[5] In particular, the financial analysts and the institutional investors are the addressees of information reported about Value-Concepts, whereby the transparence about the performance of companies increases and simultaneously the attractiveness resp. directly the demand of equity instruments (shares) and debt instruments (bonds) as well are stimulated. The resultant increased market capitalisation on the one hand protects against unfriendly take-overs and on the other hand reduces the relevant capital costs of each company itself.

Different from the fundamental Profit-/Loss-Concept anchored in accounting and the resulting reporting of so-called IFRS-/GAAP-data[6] the unsolicited published information about contents and implementation of Values is based on the so-called Value-Concept. According to the Profit-/Loss-Concept the objective of profit-maximisation[7] – that during the first terms of degree courses of Applied Sciences is still taught as the primary objective of companies - is already fulfilled, if a profit and not a loss is recognised. Then this profit is

3 Cf. Alfred Rappaport: Creating Shareholder Value, New York 1986.

4 To IFRS esp. cf. Pellens, Bernhard/Fülbier, Rolf Uwe/ Gassen, Joachim/Sellhorn, Thorsten: Internationale Rechnungslegung; IFRS 1 bis 13, IAS 1 bis 41, IFRIC-Interpretationen, Standardentwürfe, 9th ed., Stuttgart 2014.

5 One of the most popular Value-Concepts is the EVA, esp. cf. Pettit, Justin (Stern Stewart & Co. Research): EVA & Strategy, New York 2000, and to the activities of Stern Stewart & Co directly www.sternstewart.com.

6 To IFRS and as well US-GAAP esp. cf. Mackenzie, Bruce/Coetsee, Danie/Njikizana, Tapiwa: Wiley IFRS 2014, Interpretation and Application of International Financial Reporting Standards, 11th ed., Hoboken 2014.

7 Cf. Schneider, Dieter: Betriebswirtschaftslehre, Band 3: Theorie der Unternehmung, München/Wien 1997, p. 112 f., very critically.

available for dividend payouts to shareholders.[8] Whether the expectance of the shareholders with respect to profit herewith is reached, could only be judged reasonable, if the profit is set into relation to the amount of shareholder's equity and their required return on equity. Since the presentation of this relation is not mandatory in the current set of accounting, there is the need for further calculations. Because of this no clear statement is feasible, whether a recognised profit has fulfilled the expectations of the shareholders or even has decreased, kept unchanged, or has increased the value of the shares (Shareholder Value).

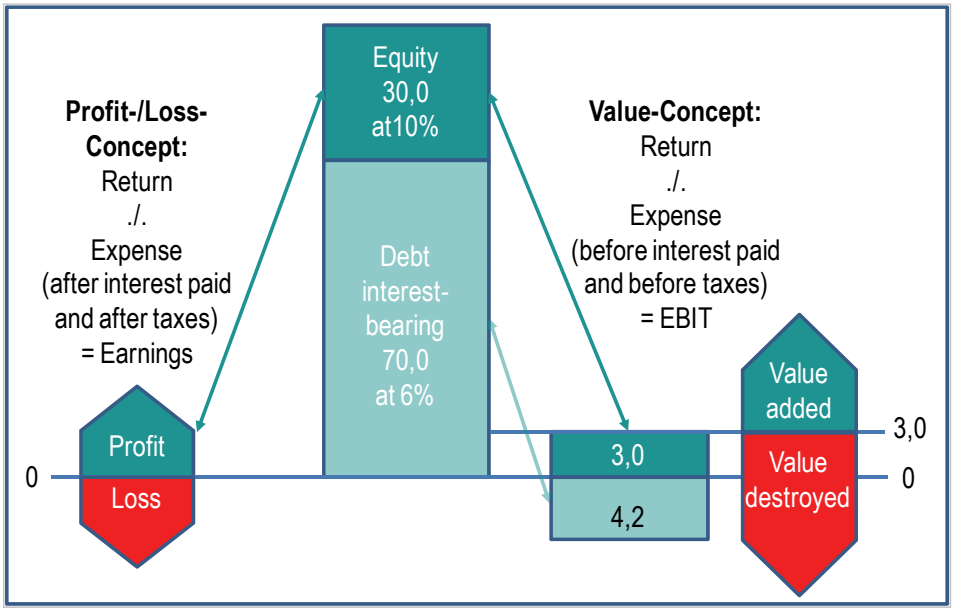

***Figure 1**:* Profit-/Loss-Concept versus Value-Concept.

In contrary, the Value-Concept (s. Figure 1) directly refers to the interest-bearing capital presented by the company totally, that comprises both the return on equity claimed by the shareholders on the one hand as well as the interest of outside creditors regularly secured in contracts on the other hand. Consequently not the profit (available for the investors), but the profit before interest paid (available for the outside creditors) is to be set into relation to the

8 To Stockholders' Rights cf. Horngren, Charles T./Harrison Jr., Walter T.: Financial and Managerial Accounting, New Jersey 2008, p. 552.

total interest-bearing capital. In order to suspend tax effects on companies with different characteristics the profit before taxes and before interest paid has to be examined reasonably: the EBIT (Earnings Before Interest and Taxes).[9] In the sense of the Value-Concept the value of the company from the point of view of the shareholders – therewith the value of equity - is fulfilled not till then the EBIT is higher than the total capital costs regarding the outside creditors and the investors at the same time. The amount of these absolute capital costs is calculated by multiplying the total interest-bearing capital (equity + debt) with the weigthed average of costs of equity and costs of debt: WACC (Weighted Average Cost of Capital).[10]

Given this and because of the orientation of measuring the company's performance with regard to the concerns of the investors (shareholders) starting in the end of the 80s the Value-Concept is applicable to answer the question of achieving or not-achieving of the defined objective: increasing shareholder's value. The view onto e. g. DAX30-companies makes visible that nearly all companies pursuit such a Value-Concept and in their Annual Reports give information about their concepts more or less detailed. Certainly, each company uses individually designed Value-Concepts that prohibit a comparison of the overall performance between the companies themselves.[11] In appreciation of the need of individual characteristics in Value-Concepts of companies, nevertheless there is still a necessity to use a standardised approach in order to determine the performance of the companies and to be able to compare the results and to finalise a ranking. Ideally, the IFRS-/GAAP-data published in the Annual Reports should be used to calculate the quality of the value-performance. This is why these data transpose the IFRS as internationally accepted regulations and therewith represent the internationally harmonized consensus about those information to be delivered in the Annual Reports of companies worldwide.

9 To EBIT esp. cf. Coenenberg, Adolf G./Haller, Axel/Schultze, Wolfgang: Jahresabschluss und Jahresabschlussanalyse, 22nd ed., Stuttgart 2014, p. 1049.

10 To WACC esp. cf. Copeland, Thomas E./ Weston, J. Fred/Shastri, Kuldeep: Financial Theory and Corporate Policy, 4th ed., Boston 2005, p. 564 ff.

11 To recent fundamental analysis of 5 selected Value-Concepts in practice cf. Arbeitskreis Internes Rechnungswesen der Schmalenbach-Gesellschaft: Vergleich von Praxiskonzepten zur wertorientierten Unternehmenssteuerung, in: zfbf (Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung), 62nd Vol. (2010), p. 797-820.

2.2 'White Box'-cfrv: players, implementation and results

The first considerations to this approach already started 3 years ago, where during winter term our students of China in the course Management Accounting have analysed the DAX30- and the HangSeng-listed stocks, esp. with regard to value-concepts reported in the Annual Reports. It has been the ambition to assess the companies on the basis of their successful implementation of the value-concept through a standardised approach.[12] The former and as well in 2 subsequent terms executed analyses were based on the data taken from the Annual Reports to calculate the interest-bearing capital and the earnings before taxes and interest (EBIT), where naturally the process has been time-consuming and within a larger group defective as well.

Consequently, in spring-time 2013 a second attempt has been started – the first attempt in spring-time 2012 has only allowed unsatisfying results - to derive the data required for meaningful calculations as an extract of the Bloomberg-Terminal that is available at one of the FOM's institutes. Through several efforts at the end the success could be gained to identify the useful Mnemonics that could be made available as well as 'Bloomberg Ticker'- as well as 'As Reported'-data. Those data - partially complemented by personal inquiries throughout the published Annual Reports, if data were not provided – have been analysed as well for industry-corporations as well as for banks and insurances and therewith independent of branches or structures up from 2005, because starting with the fiscal year 2005 the obligation to apply the IFRS has been introduced to all capital market-oriented companies within in the EU.[13]

12 To practical implementation of Value-Concepts also cf. Coenenberg, Adolf G./Salfeld, Rainer: Wertorientierte Unternehmensführung, 2nd ed., Stuttgart 2007.

13 To contents of IFRS in an international focus also cf. Picker, Ruth/Leo, Ken/Loftus, Janice et al.: International Financial Reporting Standards, 3rd ed., Milton 2012.

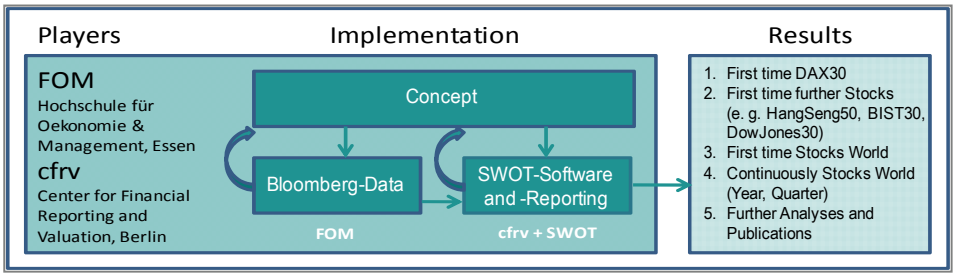

***Figure 2**:* ‚White Box'-cfrv: players, implementation and results of Value-Performance.[14]

The calculation itself (s. Figure 2) is executed with a SQL-based software specialised on budgeting and controlling (SWOT[15]), where the data have already been imported into and mapped to the structure picturing the DAX-companies to conduct the final computations. With respect to the special characteristics and as well differences in the data-structure of banks and insurances there are separate queries and separate imports used to make those data available in the SWOT-system. The core calculations are based on an individually developed SWOT Explorer-setting that transacts the results powerfully and SQL-based relevant to analyse the special parameters of the Value-Concept. Additionally, this method allows to calculate and analyse huge volumes of data in a stable and efficient manner. Finally, the assessed results are made visible in SWOT via individual Reporting Services-structures and are available for standardized as well as for individual display- and export-patterns. By now, the attained level of process starting from data-collection, through import, mapping, picturing, and calculating, up to meaningful reports is significantly satisfying. Therewith the process enables updates of data and results annually resp. during the fiscal year. Most notably, the developed approach could be rolled out to examine and present the results of broader stock exchange-indices.[16]

14 Further information about the activities and esp. the degree courses of FOM are available at www.fom.de, further information about cfrv and the IFRS-specialised business model are available at www.cfrv.net.

15 Cf. directly SWOT Controlling GmbH, Berlin: www.swot.de, where on the basis of a longlasting close partnership a powerful software-application could be developed to analyse and illustrate the performance of listed stock.

16 Currently the calculations of the index BIST30 at stock exchange Istanbul as well as the index DJ30 at stock exchange New York are already prepared.

3 First results of Value-Performance DAX30 and HangSeng50 for 2012

3.1 First results of Value-Performance DAX30 for 2012

3.1.1 Ranking 2012 for DAX30-companies ordered by Value-Rate cfrv

Against the background of the presented Value-Concept[17] and the practically described course of action to determine the Value-Performance on the basis of the factual standardised approach now the first results could be introduced. For DAX30 data of the fiscal years from 2004 up to 2012 have been analysed. To demonstrate the Value-Performance of fiscal year 2012 the companies are ranked by the relative Value Added cfrv, which is measured concretely through the Value-Rate cfrv (Value Added cfrv divided by Interest-Bearing Capital cfrv avg). Subsequently, the ranking is headed by Deutsche Börse AG, followed by Beiersdorf AG and SAP AG (s. Figure 3). The tail lamps of the ranking are Deutsche Telekom AG, Commerzbank AG, Deutsche Bank AG, and Thyssen-Krupp AG, all of them showing clearly negative Value-Rate cfrv and as well remarkable negative Value Added cfrv (Value Destroyed).

As the view to the Ranking 2012 of the Value-Performance offers, solely the first 19 companies (down to and including Daimler AG) have earned their costs of capital. Accordingly, the companies lower than ranking 20 have not been able to generate their costs of capital, even although except of Deutsche Telekom AG und ThyssenKrupp AG all of the DAX30-companies have reported IFRS-profits in fiscal year 2012. Obviously, herewith the better accuracy of the Value-Concept becomes apparent compared to the Profit-/Loss-Concept that is mandatory in accounting resp. Annual Reports. Additionally, it may be of certain interest that for all DAX30-companies a Value Destroyed to the total amount of -3.223 Mio. € is assessed.

17 To overview Value-Concepts esp. cf. Bruns, Christoph/Meyer-Bullerdiek, Frieder: Professionelles Portfoliomanagement, 5th ed., Stuttgart 2013, p. 333 ff.

Ranking 2012	DAX30-companies ordered by Value-Rate cfrv	Value-Rate cfrv (%)	Value Added cfrv (Mio. €)	Capital Costs absolute cfrv (Mio. €)	Interest-Bearing Capital cfrv avg (Mio. €)
1	Deutsche Börse AG	11,47	530	397	4.619
2	Beiersdorf AG	11,25	403	278	3.580
3	SAP AG	11,06	2.115	1.776	19.120
4	K+S AG	9,95	516	492	5.192
5	Fresenius Medical Care AG & Co.	8,38	1.040	795	12.409
6	Fresenius SE & KGaA	8,15	1.802	1.255	22.106
7	Henkel AG & Co. KGaA	6,73	974	1.165	14.475
8	Volkswagen AG	5,84	13.049	12.998	223.355
9	Continental AG	5,39	1.078	1.995	19.998
10	Münchener Rück AG	4,78	1.213	2.848	25.366
11	adidas AG	4,22	294	619	6.974
12	Deutsche Post AG	3,17	744	2.088	23.423
13	LANXESS AG	3,15	178	587	5.661
14	BASF SE	3,05	1.432	5.092	46.966
15	BMW AG	1,65	1.764	6.215	107.057
16	Allianz SE	1,53	793	7.516	51.736
17	Linde AG	1,23	292	1.741	23.683
18	Siemens AG	0,39	254	5.955	64.473
19	Daimler AG	0,36	490	7.593	134.276
20	Deutsche Lufthansa AG	-0,03	-7	1.400	18.966
21	Infineon Technlologies AG	-1,08	-44	492	4.100
22	BAYER AG	-1,47	-594	4.094	40.406
23	RWE AG	-1,90	-1.271	4.337	66.718
24	HeidelbergCement AG	-2,33	-579	1.833	24.807
25	Merck KGaA	-2,36	-411	1.307	17.408
26	E.ON SE	-2,80	-2.900	7.663	103.444
27	Deutsche Telekom AG	-9,83	-9.246	5.049	94.068
28	Commerzbank AG	-11,99	-3.107	4.012	25.919
29	Deutsche Bank AG	-13,98	-7.623	8.407	54.535
30	ThyssenKrupp AG	-28,54	-6.403	1.845	22.435
Sum resp. Average at Value-Rate		**0,85**	**-3.223**	**101.845**	**1.287.270**

Figure 3: Ranking 2012 DAX30 ordered by Value-Rate cfrv.

3.1.2 Ranking 2012 for DAX30-companies ordered by Price-Value-Ratio cfrv

Actually, which consequences do have the results assessed to measure the Value-Performance based on the standardised approach with respect to the attractiveness and therefore to the practical demand for shares of the analysed DAX30-companies? To answer this question it is meaningful to consider market data like the changes in share prices including the changes in the number of shares to be able to compare the changes in market capitalisation with the changes in Value-Performance. To build a Ranking that is able to link the Value-Performance with changes in share prices, apparently highly suitable is the herewith introduced Price-Value-Ratio cfrv (PVR cfrv, s. Figure 4).

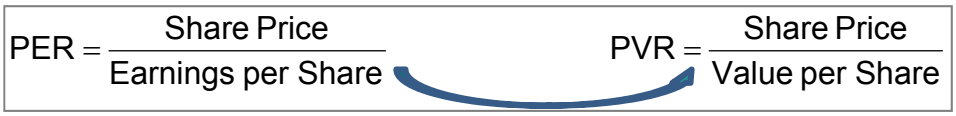

Figure 4: Change from Price-Earnings-Ratio (PER) to Price-Value-Ratio cfrv (PVR cfrv).

Analogous to Price-Earnings-Ratio (PER) that is well established and commonly used in the Financial Community to show the relation between Share Price and Earnings per Share[18], the new and herein used Value-Ratio cfrv (PVR cfrv) shows the relation between Share Price and the newly calculated Value Added per Share cfrv (VAPS cfrv). This ratio allows the Financial Community to determine shares with respect to Buy, Hold, or Sell. Therewith the recommendation Buy, Hold, or Sell could be based on VAPS cfrv in addition to the PER already being in place. The interpretation of Price-Value-Ratio cfrv (PVR cfrv) so far is the same as the interpretation of Price-Earnings-Ratio (PER).[19]

Actually, with the use of Price-Value-Ratio cfrv (PVR cfrv) the Value-Performance of the DAX30-companies for fiscal year 2012 is directly related to the amount of the corresponding share prices and shows a Ranking 2012 that effectively is justified to the movement of share prices (s. Figure 5).

18 Cf. Perridon, Louis/Steiner, Manfred/Rathgeber, Andreas: Finanzwirtschaft der Unternehmung, 16th ed., München 2012, p. 234 f.

19 To PER or P/E esp. cf. Brealey, Richard A./Myers, Stewart C./Allen, Franklin: Principles of Corporate Finance, 11th ed., New York 2014, p. 78 ff.

Ranking 2012	DAX30-companies ordered by Price-Value-Ratio cfrv	Price-Value-Ratio cfrv (PVR cfrv)	Price-Earnings-Ratio (PER)	Value Added per Share cfrv (VAPS cfrv)	Earnings per Share (EPS)
1	Volkswagen AG	6,14	3,66	28,05	47,04
2	Fresenius SE & KGaA	8,25	8,58	10,56	10,15
3	K+S AG	12,97	10,03	2,70	3,49
4	Fresenius Medical Care AG & Co.	15,36	15,47	3,41	3,38
5	Deutsche Börse AG	16,02	12,68	2,88	3,65
6	Continental AG	16,25	8,90	5,39	9,84
7	Münchener Rück AG	20,01	7,60	6,80	17,90
8	Deutsche Post AG	26,99	11,28	0,62	1,47
9	BMW AG	27,12	9,34	2,69	7,81
10	Henkel AG & Co. KGaA	27,73	17,36	2,24	3,58
11	LANXESS AG	30,90	10,71	2,14	6,19
12	SAP AG	34,18	25,60	1,78	2,37
13	Beiersdorf AG	34,84	31,12	1,78	1,99
14	BASF SE	45,63	12,90	1,56	5,52
15	adidas AG	47,84	26,88	1,41	2,50
16	Allianz SE	59,88	9,18	1,75	11,42
17	Linde AG	80,55	17,76	1,64	7,43
18	Daimler AG	90,07	6,79	0,46	6,09
19	Siemens AG	256,24	14,18	0,29	5,30
20	Deutsche Lufthansa AG	-999,27	6,52	-0,01	2,19
21	Infineon Technlologies AG	-120,46	12,53	-0,04	0,39
22	BAYER AG	-100,11	23,82	-0,72	3,02
23	Merck KGaA	-52,76	37,48	-1,89	2,66
24	HeidelbergCement AG	-14,85	15,76	-3,09	2,91
25	RWE AG	-14,77	11,01	-2,12	2,84
26	E.ON SE	-9,26	10,17	-1,52	1,39
27	Deutsche Telekom AG	-4,02	-7,81	-2,14	-1,10
28	Deutsche Bank AG	-3,96	103,82	-8,31	0,32
29	Commerzbank AG	-2,52	71,97	-4,25	0,15
30	ThyssenKrupp AG	-1,33	-1,69	-12,45	-9,80
Median		**15,69**	**11,90**	**1,48**	**3,20**

Figure 5: Ranking 2012 DAX30 ordered by Price-Value-Ratio cfrv.

On the basis of Price-Value-Ratio cfrv (PVR cfrv) the Ranking 2012 is headed by Volkswagen AG, Fresenius SE & KGaA, and K+S AG. With ratios from 6,14 resp. 8,25 and 12,97 those companies have created the highest Value in respect to the share price (ca. 16%, 12% und 8%). The bottom of the Ranking is represented by Deutsche Bank AG, Commerzbank AG, and Thyssenkrupp AG, which all of them have destroyed Value, namely in the amount of ca. 25%, 40%, and even 75% of the corresponding share price.

The comparison between Price-Value-Ratio cfrv (PVR cfrv) and Price-Earnings-Ratio (PER) shows very similar ratios for some companies (e. g., Ranking 4 Fresenius Medical Care AG & Co. with 15,36 resp. 14,47), wherewith the judgement about the company‘s performance is very stable and independent of the fact, whether the Profit-/Loss-Concept or the Value-Concept is used. But in case of severe differences between both ratios, it could be concluded that the decision about Buy, Hold, or Sell actually still based on the PER is at least questionable. Hence, if the PVR cfrv is used instead of the PER, the assessment of the companies lead to remarkable downgrades, e. g. at Münchner Rück AG (PVR cfrv 20,01 against PER 7,60), BMW AG (PVR cfrv 27,12 against PER 9,34), and particularly at Daimler AG (PVR cfrv 90,07 against PER 6,79). Very interesting is the view on Lufthansa AG, where the actually very attractive PER in the amount of 6,52 is replaced by the PVR cfrv with the amount of -999,27. In fact, Lufthansa AG only has destroyed 0,1 percent Value of its share price, but has lost its second best place behind Volkswagen AG and in front of Daimler AG in the Ranking based on PER. Based on PVR cfrv Lufthansa AG falls down to place 20 in the Ranking.

3.1.3 Recommendation for DAX30-companies to Buy, Hold, or Sell

To make the effects of the usage of the new PVR cfrv more visible, the DAX30-companies could be ranked directly with regard to the actually still used PER against the new PVR cfrv. The recommendations to Buy, Hold, or Sell shares then follows the idea, that there a commonly accepted critical values (used like hurdle rates) with respect to the amount of PER and the same way of PVR cfrv.[20] The results could be shown directly, if those critical values are used to cluster the DAX-companies in groups that are suggested to Buy, Hold, or Sell.

To use the critical values just mentioned the Price-Earnings-Ratio could be interpreted up to an amount of 10 (s. Figure 6, Ranking left part) that Earnings have been reported of at least 10% of the corresponding share price (Buy: Volkswagen down to LANXESS). If PER shows an amount of 20 or higher, the reported Earnings reach 5% or less of the corresponding share price (Sell: BAYER down to ThyssenKrupp). If the new and predominant Value-Concept is used to analyse and assess the Performance, the calculations lead to a

20 Cf. Wolf, Roland: Value-Performance DAX30, Ranking nach Kurs-Value-Verhältnis, in: Bank intern, 17th Vol. (2014), Supplement to Nr. 08/2014, where the results have already been briefly presented.

different Ranking. Hence, on the basis of Price-Value-Ratio cfrv the recommendation ‚Buy' only could be made for Volkswagen and Fresenius SE, if an increase in Value Added of 10% or more of the corresponding share price is expected (s. Figure 6, Ranking right part: PVR cfrv at 10 or lower). The companies with PVR cfrv at an amount of more than 20 are identified to perform an increase in Value Added of less than 5% of the corresponding share price (or even show Value Destroyed), why for those companies the recommendation will be neither 'Buy' nor 'Hold' (Deutsche Post down to ThyssenKrupp).

Ranking 2012	DAX30 orderd by PER - still common -	PER		Ranking 2012	DAX30 ordered by PVR - new -	PVR cfrv
1	Volkswagen AG	3,66	Buy	1	Volkswagen AG	6,14
2	Deutsche Lufthansa AG	6,52		2	Fresenius SE & KGaA	8,25
3	Daimler AG	6,79		3	K+S AG	12,97
4	Münchener Rück AG	7,60		4	Fresenius Medical Care AG & Co.	15,36
5	Fresenius SE & KGaA	8,58		5	Deutsche Börse AG	16,02
6	Continental AG	8,90		6	Continental AG	16,25
7	Allianz SE	9,18		7	Münchener Rück AG	20,01
8	BMW AG	9,34		8	Deutsche Post AG	26,99
9	K+S AG	10,03		9	BMW AG	27,12
10	E.ON SE	10,17	Hold	10	Henkel AG & Co. KGaA	27,73
11	LANXESS AG	10,71		11	LANXESS AG	30,90
12	RWE AG	11,01		12	SAP AG	34,18
13	Deutsche Post AG	11,28		13	Beiersdorf AG	34,84
14	Infineon Technlologies AG	12,53		14	BASF SE	45,63
15	Deutsche Börse AG	12,68		15	adidas AG	47,84
16	BASF SE	12,90		16	Allianz SE	59,88
17	Siemens AG	14,18		17	Linde AG	80,55
18	Fresenius Medical Care AG & Co.	15,47		18	Daimler AG	90,07
19	HeidelbergCement AG	15,76		19	Siemens AG	256,24
20	Henkel AG & Co. KGaA	17,36		20	Deutsche Lufthansa AG	-999,27
21	Linde AG	17,76		21	Infineon Technlologies AG	-120,46
22	BAYER AG	23,82	Sell	22	BAYER AG	-100,11
23	SAP AG	25,60		23	Merck KGaA	-52,76
24	adidas AG	26,88		24	HeidelbergCement AG	-14,85
25	Beiersdorf AG	31,12		25	RWE AG	-14,77
26	Merck KGaA	37,48		26	E.ON SE	-9,26
27	Commerzbank AG	71,97		27	Deutsche Telekom AG	-4,02
28	Deutsche Bank AG	103,82		28	Deutsche Bank AG	-3,96
29	Deutsche Telekom AG	-7,81		29	Commerzbank AG	-2,52
30	ThyssenKrupp AG	-1,69		30	ThyssenKrupp AG	-1,33

Figure 6: Recommendation DAX30 to Buy, Hold, or Sell.

3.2 First Results of Value-Performance HangSeng50 for 2012

3.2.1 Ranking 2012 for HangSeng50-companies ordered by Value-Rate cfrv

The same way the previous DAX30-companies have been analysed now and first time the HangSeng50-companies have been assessed with the same Value-Concept and the same practically described course of action to determine the Value-Performance on the basis of the factual standardised approach. For HangSeng50 data of the fiscal years from 2011 up to 2012 have been analysed and herewith the first results could be introduced. Again, to demonstrate the Value-Performance of fiscal year 2012 the companies are ranked by the relative Value Added cfrv, which is measured concretely through the Value-Rate cfrv (remember: Value Added cfrv divided by Interest-Bearing Capital cfrv avg). Accordingly, the ranking is headed by Want Want China Holdings, followed by ICBC, Tencent Holdings, and CCB (s. Figure 7). The tail lamps of the ranking are Sino Land, Cathay Pacific, Hang Lung, and China Life, all of them showing clearly negative Value-Rate cfrv and as well remarkable negative Value Added cfrv (Value Destroyed, e. g. China Life).

Again, as the view to the Ranking 2012 of the Value-Performance offers, solely the first 35 companies (down to and including China Merchants Holdings) have earned their costs of capital. Accordingly, the companies ranked 36 or lower have not been able to generate their costs of capital, even all of the HangSeng50-companies have reported CAS/IFRS-profits in fiscal year 2012. Obviously again, herewith the better accuracy of the Value-Concept becomes apparent compared to the Profit-/Loss-Concept that is mandatory in accounting resp. Annual Reports[21]. Additionally, it may be of certain interest that for all HangSeng50-companies a Value Added to the total amount of 107.176 Mio. € is assessed.

21 To GAAP as basis for Annual Reports cf. Kieso, Donald E./Weygandt, Jerry J./Warfield, Terry D.: Intermediate Accounting, 13th ed., Hoboken 2010, p. 13 ff.

Ranking 2012	HangSeng50-companies ordered by Value-Rate cfrv	Value-Rate cfrv (%)	Value Added cfrv (Mio. €)	Capital Costs absolute cfrv (Mio. €)	Interest-Bearing Capital cfrv avg (Mio. €)
1	WANT WANT CHINA HOLDINGS LTD	21,06	402	152	1.907
2	IND & COMM BK OF CHINA-H	20,78	26.437	11.630	127.230
3	TENCENT HOLDINGS LTD	18,48	1.098	696	5.939
4	CHINA CONSTRUCTION BANK-H	18,23	19.632	11.375	107.717
5	HANG SENG BANK LTD	16,80	1.423	796	8.469
6	CNOOC LTD	15,40	6.835	4.174	44.368
7	CHINA MOBILE LTD	14,37	12.774	6.837	88.926
8	HONG KONG EXCHANGES & CLEAR	13,06	216	235	1.652
9	BANK OF CHINA LTD-H	12,97	12.808	10.300	98.720
10	HENGAN INTL GROUP CO LTD	12,44	281	168	2.258
11	BANK OF COMMUNICATIONS CO-H	11,88	4.740	4.536	39.885
12	CHINA OVERSEAS LAND & INVEST	11,02	1.441	1.500	13.070
13	BELLE INTERNATIONAL HOLDINGS	10,85	312	355	2.879
14	TINGYI (CAYMAN ISLN) HLDG CO	10,82	374	258	3.458
15	CHINA SHENHUA ENERGY CO-H	10,25	4.192	4.512	40.884
16	GALAXY ENTERTAINMENT GROUP L	10,06	299	480	2.973
17	POWER ASSETS HOLDINGS LTD	8,68	615	358	7.080
18	KUNLUN ENERGY CO LTD	8,42	695	689	8.250
19	BOC HONG KONG HOLDINGS LTD	8,11	1.151	1.410	14.196
20	AIA GROUP LTD	7,18	1.270	1.623	17.691
21	HONG KONG & CHINA GAS	7,12	553	495	7.771
22	WHARF HOLDINGS LTD	6,79	2.090	3.271	30.759
23	MTR CORP	5,29	678	957	12.814
24	CHINA PETROLEUM & CHEMICAL-H	5,16	5.175	7.126	100.374
25	CLP HOLDINGS LTD	4,44	815	727	18.357
26	CHINA RESOURCES POWER HOLDIN	4,02	586	769	14.573
27	CHINA RESOURCES LAND LTD	3,08	396	1.392	12.854
28	PETROCHINA CO LTD-H	3,05	5.956	16.078	195.125
29	LENOVO GROUP LTD	2,40	64	341	2.686
30	BANK OF EAST ASIA	2,09	117	642	5.598
31	NEW WORLD DEVELOPMENT	2,07	420	1.498	20.234
32	SUN HUNG KAI PROPERTIES	1,41	536	4.319	38.089
33	SWIRE PACIFIC LTD-A	1,21	334	2.201	27.566
34	CHINA RESOURCES ENTERPRISE	1,17	81	577	6.920
35	CHINA MERCHANTS HLDGS INTL	0,48	37	767	7.632
36	SANDS CHINA LTD	-0,05	-4	996	6.817
37	HSBC HOLDINGS PLC	-0,10	-133	16.202	133.462
38	CHINA COAL ENERGY CO-H	-0,60	-102	1.718	16.908
39	HUTCHISON WHAMPOA LTD	-1,14	-772	5.163	67.959
40	PING AN INSURANCE GROUP CO-H	-1,17	-273	3.434	23.233
41	HENDERSON LAND DEVELOPMENT	-1,19	-299	2.495	25.080
42	COSCO PACIFIC LTD	-1,50	-69	416	4.611
43	CHEUNG KONG HOLDINGS LTD	-2,62	-969	4.340	37.037
44	LI & FUNG LTD	-2,68	-160	776	5.959
45	CITIC PACIFIC LTD	-2,70	-550	1.324	20.360
46	CHINA UNICOM HONG KONG LTD	-2,75	-1.007	2.538	36.617
47	SINO LAND CO	-3,40	-334	1.423	9.835
48	CATHAY PACIFIC AIRWAYS	-3,63	-413	625	11.358
49	HANG LUNG PROPERTIES LTD	-4,32	-577	1.565	13.348
50	CHINA LIFE INSURANCE CO-H	-7,85	-1.995	3.322	25.400
Sum resp. Average at Value-Rate		**5,50**	**107.176**	**149.580**	**1.576.888**

Figure 7: Ranking 2012 HangSeng50 ordered by Value-Rate cfrv

3.3 Ranking 2012 HangSeng50-companies ordered by Price-Value-Ratio cfrv

Analogous to the analyses of DAX30 and again to Price-Earnings-Ratio (PER) (well established and commonly used in the Financial Community to show the relation between Share Price and Earnings per Share), the new and herein also used Value-Ratio cfrv (PVR cfrv) shows the relation between Share Price and the newly calculated Value Added per Share cfrv (VAPS cfrv). Again, therewith the recommendation Buy, Hold, or Sell could be based on VAPS cfrv in addition to the PER already being in place. Remember: the interpretation of Price-Value-Ratio cfrv (PVR cfrv) so far is the same as the interpretation of Price-Earnings-Ratio (PER).

Accordingly, with the use of Price-Value-Ratio cfrv (PVR cfrv) the Value-Performance of the HangSeng50-companies for fiscal year 2012 is directly related to the amount of the corresponding share prices and shows a Ranking 2012 that effectively is justified to the movement of share prices (s. Figure 8).

On the basis of Price-Value-Ratio cfrv (PVR cfrv) the Ranking 2012 for HangSeng50 is headed by ICBC, BOC, CCB, BCC, and Wharf Holdings. With ratios from 7,11 resp. 7,37 up to 8,59 those companies (except Wharf all banks) have created the highest Value in respect to the share price (ca. 14%, 14%, 13%, 12%, and 12%). The bottom of the Ranking is represented by Hang Lung, Sino Land, Cathay Pacific, and Citic Pacific, which all of them have destroyed Value, namely in the amount of ca. 4%, 5%, 8%, and even 13% of the corresponding share price.

Again, the comparison between Price-Value-Ratio cfrv (PVR cfrv) and Price-Earnings-Ratio (PER) shows very similar ratios only for one companies (e. g., Ranking 15 CLP Holdings with 19,18 resp. 18,80), wherewith the judgement about the company‘s performance is only there very stable and independent of the fact, whether the Profit-/Loss-Concept or the Value-Concept is used. But in case of severe differences between both ratios, again it could be concluded that the decision about Buy, Hold, or Sell actually still based on the PER is at least questionable. Hence, if the PVR cfrv is used instead of the PER, the assessment of the companies lead to remarkable downgrades, e. g. at Swire Pacific (PVR cfrv 42,16 against PER 6,55), China Merchants (PVR cfrv 164,24 against PER 10,53), and particularly at Henderson Land (PVR cfrv -42,75 against PER 6,27). Very interesting is the view on Citic Pacific, where the actually very attractive PER in the amount of 7,66 is replaced by the PVR cfrv

with the amount of -7,50. In fact, Citic Pacific only has destroyed 13 percent Value of its share price, but has lost its eleventh best place behind Sino Land and in front of Cheung Kong in the Ranking based on PER. Based on PVR cfrv Citic Pacific falls down to place 50 in the Ranking.

Ranking 2012	HangSeng50-companies ordered by Price-Value-Ratio cfrv	Price-Value-Ratio cfrv (PVR cfrv)	Price-Earnings-Ratio (PER)	Value Added per Share cfrv (VAPS cfrv)	Earnings per Share (EPS)
1	IND & COMM BK OF CHINA-H	7,11	6,38	0,08	0,08
2	BANK OF CHINA LTD-H	7,37	5,26	0,05	0,06
3	CHINA CONSTRUCTION BANK-H	7,74	6,37	0,08	0,10
4	BANK OF COMMUNICATIONS CO-H	8,20	5,39	0,07	0,11
5	WHARF HOLDINGS LTD	8,59	3,70	0,69	1,60
6	CNOOC LTD	10,72	9,33	0,15	0,18
7	NEW WORLD DEVELOPMENT	11,48	3,50	0,08	0,26
8	CHINA OVERSEAS LAND & INVEST	12,81	9,77	0,18	0,23
9	CHINA MOBILE LTD	13,87	11,11	0,64	0,79
10	CHINA PETROLEUM & CHEMICAL-H	14,39	9,04	0,05	0,07
11	HANG SENG BANK LTD	15,59	11,38	0,74	1,02
12	CHINA RESOURCES POWER HOLDIN	15,69	10,50	0,12	0,18
13	CHINA SHENHUA ENERGY CO-H	15,75	9,38	0,21	0,35
14	KUNLUN ENERGY CO LTD	17,32	12,10	0,09	0,13
15	CLP HOLDINGS LTD	19,18	18,80	0,33	0,34
16	BOC HONG KONG HOLDINGS LTD	21,65	11,52	0,11	0,20
17	POWER ASSETS HOLDINGS LTD	22,48	14,26	0,29	0,45
18	MTR CORP	25,46	12,59	0,12	0,24
19	AIA GROUP LTD	28,37	15,29	0,11	0,20
20	HENGAN INTL GROUP CO LTD	29,94	23,68	0,23	0,29
21	CHINA RESOURCES LAND LTD	30,33	10,70	0,07	0,19
22	TINGYI (CAYMAN ISLN) HLDG CO	31,49	25,22	0,07	0,08
23	HONG KONG & CHINA GAS	32,48	21,28	0,06	0,09
24	PETROCHINA CO LTD-H	32,99	12,20	0,03	0,09
25	WANT WANT CHINA HOLDINGS LTD	34,38	32,03	0,03	0,03
26	TENCENT HOLDINGS LTD	40,75	28,37	0,60	0,86
27	GALAXY ENTERTAINMENT GROUP L	41,55	16,78	0,07	0,18
28	SWIRE PACIFIC LTD-A	42,16	6,55	0,22	1,43
29	BELLE INTERNATIONAL HOLDINGS	44,41	26,00	0,04	0,06
30	SUN HUNG KAI PROPERTIES	44,89	5,71	0,21	1,63
31	BANK OF EAST ASIA	53,24	10,10	0,05	0,29
32	HONG KONG EXCHANGES & CLEAR	66,49	35,02	0,19	0,37
33	CHINA RESOURCES ENTERPRISE	81,21	13,02	0,03	0,21
34	LENOVO GROUP LTD	106,38	19,83	0,01	0,03
35	CHINA MERCHANTS HLDGS INTL	164,24	10,53	0,01	0,23
36	SANDS CHINA LTD	-7.505,16	27,79	-0,00	0,12
37	HSBC HOLDINGS PLC	-1.085,08	12,10	-0,01	0,66
38	PING AN INSURANCE GROUP CO-H	-184,12	20,31	-0,03	0,31
39	CHINA COAL ENERGY CO-H	-106,81	9,24	-0,01	0,09
40	LI & FUNG LTD	-68,89	22,72	-0,02	0,06
41	HUTCHISON WHAMPOA LTD	-43,71	10,39	-0,18	0,76
42	COSCO PACIFIC LTD	-42,96	10,76	-0,03	0,10
43	HENDERSON LAND DEVELOPMENT	-42,75	6,27	-0,11	0,78
44	CHINA LIFE INSURANCE CO-H	-35,04	51,25	-0,07	0,05
45	CHINA UNICOM HONG KONG LTD	-28,40	32,70	-0,04	0,04
46	CHEUNG KONG HOLDINGS LTD	-27,80	8,26	-0,42	1,41
47	HANG LUNG PROPERTIES LTD	-23,37	15,06	-0,13	0,20
48	SINO LAND CO	-20,77	6,71	-0,06	0,18
49	CATHAY PACIFIC AIRWAYS	-13,25	48,33	-0,10	0,03
50	CITIC PACIFIC LTD	-7,50	7,66	-0,15	0,15
	Median	**14,99**	**11,45**	**0,06**	**0,19**

***Figure 8**:* Ranking 2012 HangSeng50 ordered by Price-Value-Ratio cfrv.

3.4 Recommendation for HangSeng50-companies to Buy, Hold, or Sell

Again, to make the effects of the usage of the new PVR cfrv more visible, the HangSeng50-companies could be ranked directly with regard to the actually still used PER against the new PVR cfrv. The recommendations to Buy, Hold, or Sell shares then follows the idea again, that there a commonly accepted critical values (used like hurdle rates) with respect to the amount of PER and the same way to the amount of PVR cfrv.[22] The results could be shown directly, if those critical values are used to cluster the HangSeng-companies in groups that are suggested to Buy, Hold, or Sell (s. Figure 9).

Again, to use the critical values the Price-Earnings-Ratio could be interpreted up to an amount of 10 (s. Figure 9, Ranking left part) that Earnings have been reported of at least 10% of the corresponding share price (Buy: Now World down to Cosco Pacific). If PER shows an amount of 20 or higher, the reported Earnings reach 5% or less of the corresponding share price (Sell: Hong Kong & China Gas down to China Life). If again the new and predominant Value-Concept is used to analyse and assess the Performance, the calculations lead to a different Ranking. Hence, on the basis of Price-Value-Ratio cfrv the recommendation ‚Buy' only could be made for ICBC, BOC, CCB, BCC, Wharf, and CNOOC, if an increase in Value Added of 10% or more of the corresponding share price is expected (s. Figure 9, Ranking right part: PVR cfrv at 10 or lower). The companies with PVR cfrv at an amount of more than 20 are identified to perform an increase in Value Added of less than 5% of the corresponding share price (or even show Value Destroyed), why for those companies the recommendation will be neither 'Buy' nor 'Hold' (BOC Hong Kong Holdings down to Citic Pacific).

22 Cf. Wolf, Roland: Value-Performance HangSeng50, Ranking nach Kurs-Value-Verhältnis, in: Bank intern, 17th Vol. (2014), Supplement to Nr. 16/2014., where the results have already been briefly presented.

Ranking 2012	HangSeng50 ordered by PER - still common -	PER		Ranking 2012	HangSeng50 ordered by PVR - new -	PVR cfrv
1	NEW WORLD DEVELOPMENT	3,50		1	IND & COMM BK OF CHINA-H	7,11
2	WHARF HOLDINGS LTD	3,70		2	BANK OF CHINA LTD-H	7,37
3	BANK OF CHINA LTD-H	5,26		3	CHINA CONSTRUCTION BANK-H	7,74
4	BANK OF COMMUNICATIONS CO-H	5,39	Buy	4	BANK OF COMMUNICATIONS CO-H	8,20
5	SUN HUNG KAI PROPERTIES	5,71		5	WHARF HOLDINGS LTD	8,59
6	HENDERSON LAND DEVELOPMENT	6,27		6	CNOOC LTD	10,72
7	CHINA CONSTRUCTION BANK-H	6,37		7	NEW WORLD DEVELOPMENT	11,48
8	IND & COMM BK OF CHINA-H	6,38		8	CHINA OVERSEAS LAND & INVEST	12,81
9	SWIRE PACIFIC LTD-A	6,55		9	CHINA MOBILE LTD	13,87
10	SINO LAND CO	6,71		10	CHINA PETROLEUM & CHEMICAL-H	14,39
11	CITIC PACIFIC LTD	7,66		11	HANG SENG BANK LTD	15,59
12	CHEUNG KONG HOLDINGS LTD	8,26		12	CHINA RESOURCES POWER HOLDIN	15,69
13	CHINA PETROLEUM & CHEMICAL-H	9,04		13	CHINA SHENHUA ENERGY CO-H	15,75
14	CHINA COAL ENERGY CO-H	9,24		14	KUNLUN ENERGY CO LTD	17,32
15	CNOOC LTD	9,33		15	CLP HOLDINGS LTD	19,18
16	CHINA SHENHUA ENERGY CO-H	9,38		16	BOC HONG KONG HOLDINGS LTD	21,65
17	CHINA OVERSEAS LAND & INVEST	9,77		17	POWER ASSETS HOLDINGS LTD	22,48
18	BANK OF EAST ASIA	10,10		18	MTR CORP	25,46
19	HUTCHISON WHAMPOA LTD	10,39	Hold	19	AIA GROUP LTD	28,37
20	CHINA RESOURCES POWER HOLDIN	10,50		20	HENGAN INTL GROUP CO LTD	29,94
21	CHINA MERCHANTS HLDGS INTL	10,53		21	CHINA RESOURCES LAND LTD	30,33
22	CHINA RESOURCES LAND LTD	10,70		22	TINGYI (CAYMAN ISLN) HLDG CO	31,49
23	COSCO PACIFIC LTD	10,76		23	HONG KONG & CHINA GAS	32,48
24	CHINA MOBILE LTD	11,11		24	PETROCHINA CO LTD-H	32,99
25	HANG SENG BANK LTD	11,38		25	WANT WANT CHINA HOLDINGS LTD	34,38
26	BOC HONG KONG HOLDINGS LTD	11,52		26	TENCENT HOLDINGS LTD	40,75
27	HSBC HOLDINGS PLC	12,10		27	GALAXY ENTERTAINMENT GROUP L	41,55
28	KUNLUN ENERGY CO LTD	12,10		28	SWIRE PACIFIC LTD-A	42,16
29	PETROCHINA CO LTD-H	12,20		29	BELLE INTERNATIONAL HOLDINGS	44,41
30	MTR CORP	12,59		30	SUN HUNG KAI PROPERTIES	44,89
31	CHINA RESOURCES ENTERPRISE	13,02		31	BANK OF EAST ASIA	53,24
32	POWER ASSETS HOLDINGS LTD	14,26		32	HONG KONG EXCHANGES & CLEAR	66,49
33	HANG LUNG PROPERTIES LTD	15,06		33	CHINA RESOURCES ENTERPRISE	81,21
34	AIA GROUP LTD	15,29		34	LENOVO GROUP LTD	106,38
35	GALAXY ENTERTAINMENT GROUP L	16,78		35	CHINA MERCHANTS HLDGS INTL	164,24
36	CLP HOLDINGS LTD	18,80		36	SANDS CHINA LTD	-7.505,16
37	LENOVO GROUP LTD	19,83		37	HSBC HOLDINGS PLC	-1.085,08
38	PING AN INSURANCE GROUP CO-H	20,31		38	PING AN INSURANCE GROUP CO-H	-184,12
39	HONG KONG & CHINA GAS	21,28		39	CHINA COAL ENERGY CO-H	-106,81
40	LI & FUNG LTD	22,72	Sell	40	LI & FUNG LTD	-68,89
41	HENGAN INTL GROUP CO LTD	23,68		41	HUTCHISON WHAMPOA LTD	-43,71
42	TINGYI (CAYMAN ISLN) HLDG CO	25,22		42	COSCO PACIFIC LTD	-42,96
43	BELLE INTERNATIONAL HOLDINGS	26,00		43	HENDERSON LAND DEVELOPMENT	-42,75
44	SANDS CHINA LTD	27,79		44	CHINA LIFE INSURANCE CO-H	-35,04
45	TENCENT HOLDINGS LTD	28,37		45	CHINA UNICOM HONG KONG LTD	-28,40
46	WANT WANT CHINA HOLDINGS LTD	32,03		46	CHEUNG KONG HOLDINGS LTD	-27,80
47	CHINA UNICOM HONG KONG LTD	32,70		47	HANG LUNG PROPERTIES LTD	-23,37
48	HONG KONG EXCHANGES & CLEAR	35,02		48	SINO LAND CO	-20,77
49	CATHAY PACIFIC AIRWAYS	48,33		49	CATHAY PACIFIC AIRWAYS	-13,25
50	CHINA LIFE INSURANCE CO-H	51,25		50	CITIC PACIFIC LTD	-7,50

Figure 9: Recommendation HangSeng50 to Buy, Hold, or Sell.

4 Comparison DAX30 and HangSeng50

4.1 Comparison DAX30 and HangSeng50 ordered by Value-Rate cfrv

Consequently, after analysing the two Stock Exchange-Indices DAX30 and HangSeng50 separately now both should be examined as one group of companies. The idea is first to draw the Ranking on the basis of the foregoing new approach and second to find out special characteristics of the companies situated in different regions of the world.

The Ranking ordered by Value-Rate cfrv (s. Figure 10) shows that the first 11 places are hold by companies listed at Hong Kong Stock Exchange (Want Want down to BOC). Those companies signifanctly have earned more than their Capital Costs and therefore have not only fulfilled the shareholders objectives of creating Shareholder Value, but have also reached a very high level of Value-Performance with Value-Rates cfrv above 11%.

The view to the tail of the Ranking offers 26 companies that have not achieved to earn their Capital Costs, because their Value-Rates cfrv are negative (Deutsche Lufthansa AG placed 55 down to ThyssenKrupp AG placed 80). Additionally, it becomes obvious that in 2012 the worst companies are situated in Germany (Deutsche Telekom AG placed 77 down to ThyssenKrupp AG placed 80).

For that reason it could be stated that the Chinese companies (esp. banks) are something like TOP-performer, whereas the German companies represent the bottom of the Ranking 2012.

Ranking 2012	DAX30/HS50-companies ordered by Value-Rate cfrv	Value-Rate cfrv (%)	Ranking 2012	DAX30/HS50-companies ordered by Value-Rate cfrv	Value-Rate cfrv (%)
1	WANT WANT CHINA HOLDINGS LTD	21,06	41	PETROCHINA CO LTD-H	3,05
2	IND & COMM BK OF CHINA-H	20,78	42	BASF SE	3,05
3	TENCENT HOLDINGS LTD	18,48	43	LENOVO GROUP LTD	2,40
4	CHINA CONSTRUCTION BANK-H	18,23	44	BANK OF EAST ASIA	2,09
5	HANG SENG BANK LTD	16,80	45	NEW WORLD DEVELOPMENT	2,07
6	CNOOC LTD	15,40	46	BMW AG	1,65
7	CHINA MOBILE LTD	14,37	47	Allianz SE	1,53
8	HONG KONG EXCHANGES & CLEAR	13,06	48	SUN HUNG KAI PROPERTIES	1,41
9	BANK OF CHINA LTD-H	12,97	49	Linde AG	1,23
10	HENGAN INTL GROUP CO LTD	12,44	50	SWIRE PACIFIC LTD-A	1,21
11	BANK OF COMMUNICATIONS CO-H	11,88	51	CHINA RESOURCES ENTERPRISE	1,17
12	Deutsche Börse AG	11,47	52	CHINA MERCHANTS HLDGS INTL	0,48
13	Beiersdorf AG	11,25	53	Siemens AG	0,39
14	SAP AG	11,06	54	Daimler AG	0,36
15	CHINA OVERSEAS LAND & INVEST	11,02	55	Deutsche Lufthansa AG	-0,03
16	BELLE INTERNATIONAL HOLDINGS	10,85	56	SANDS CHINA LTD	-0,05
17	TINGYI (CAYMAN ISLN) HLDG CO	10,82	57	HSBC HOLDINGS PLC	-0,10
18	CHINA SHENHUA ENERGY CO-H	10,25	58	CHINA COAL ENERGY CO-H	-0,60
19	GALAXY ENTERTAINMENT GROUP L	10,06	59	Infineon Technlologies AG	-1,08
20	K+S AG	9,95	60	HUTCHISON WHAMPOA LTD	-1,14
21	POWER ASSETS HOLDINGS LTD	8,68	61	PING AN INSURANCE GROUP CO-H	-1,17
22	KUNLUN ENERGY CO LTD	8,42	62	HENDERSON LAND DEVELOPMENT	-1,19
23	Fresenius Medical Care AG & Co.	8,38	63	BAYER AG	-1,47
24	Fresenius SE & KGaA	8,15	64	COSCO PACIFIC LTD	-1,50
25	BOC HONG KONG HOLDINGS LTD	8,11	65	RWE AG	-1,90
26	AIA GROUP LTD	7,18	66	HeidelbergCement AG	-2,33
27	HONG KONG & CHINA GAS	7,12	67	Merck KGaA	-2,36
28	WHARF HOLDINGS LTD	6,79	68	CHEUNG KONG HOLDINGS LTD	-2,62
29	Henkel AG & Co. KGaA	6,73	69	LI & FUNG LTD	-2,68
30	Volkswagen AG	5,84	70	CITIC PACIFIC LTD	-2,70
31	Continental AG	5,39	71	CHINA UNICOM HONG KONG LTD	-2,75
32	MTR CORP	5,29	72	E.ON SE	-2,80
33	CHINA PETROLEUM & CHEMICAL-H	5,16	73	SINO LAND CO	-3,40
34	Münchener Rück AG	4,78	74	CATHAY PACIFIC AIRWAYS	-3,63
35	CLP HOLDINGS LTD	4,44	75	HANG LUNG PROPERTIES LTD	-4,32
36	adidas AG	4,22	76	CHINA LIFE INSURANCE CO-H	-7,85
37	CHINA RESOURCES POWER HOLDIN	4,02	77	Deutsche Telekom AG	-9,83
38	Deutsche Post AG	3,17	78	Commerzbank AG	-11,99
39	LANXESS AG	3,15	79	Deutsche Bank AG	-13,98
40	CHINA RESOURCES LAND LTD	3,08	80	ThyssenKrupp AG	-28,54
		Average at Value-Rate		**3,76**	

***Figure 10**:* Ranking 2012 DAX30+HS50 ordered by Value-Rate cfrv.

4.2 Comparison DAX30 and HangSeng50 ordered by Price-Value-Ratio cfrv

In order to evaluate the companies listed at Stock Exchanges Hong Kong and at Stock Exchange Frankfurt with special respect to their market performance the Price-Value-Ratio cfrv has to be considered. This ratio shows the Value Added per Share in direct relation to the Share Price.

As displayed in the Ranking 2012 ordered by Price-Value-Ratio cfrv (s. Figure 11) the TOP TEN-list consists of 8 Chinese companies (ICBC placed 2 down to China Overseas placed 10) and 2 German companies (Volkswagen AG placed 1 and Fresenius SE placed 6). All of them have nearly reached an increase of Shareholder Value of 10%, because their PVR cfrv are 12,81 or even better (exactly 10 will meet an increase of 10%).

Those companies with a negative PVR cfrv have more or less destroyed Shareholder Value. With a PVR cfrv of -7.505,16 Sands China placed 55 has destroyed only 0,01% of its Share Price, whereas ThyssenKrupp AG has destroyed 75,24% of its Share Price. That decrease of Shareholder Value can be stated as extraordinary high. All in all most of the companies analysed have created Shareholder Value (definitely 54 of 80) on the basis of PVR cfrv.

Ranking 2012	DAX30/HS50-companies ordered by Price-Value-Ratio cfrv	Price-Value-Ratio cfrv (PVR cfrv)	Ranking 2012	DAX30/HS50-companies ordered by Price-Value-Ratio cfrv	Price-Value-Ratio cfrv (PVR cfrv)
1	Volkswagen AG	6,14	41	SWIRE PACIFIC LTD-A	42,16
2	IND & COMM BK OF CHINA-H	7,11	42	BELLE INTERNATIONAL HOLDINGS	44,41
3	BANK OF CHINA LTD-H	7,37	43	SUN HUNG KAI PROPERTIES	44,89
4	CHINA CONSTRUCTION BANK-H	7,74	44	BASF SE	45,63
5	BANK OF COMMUNICATIONS CO-H	8,20	45	adidas AG	47,84
6	Fresenius SE & KGaA	8,25	46	BANK OF EAST ASIA	53,24
7	WHARF HOLDINGS LTD	8,59	47	Allianz SE	59,88
8	CNOOC LTD	10,72	48	HONG KONG EXCHANGES & CLEAR	66,49
9	NEW WORLD DEVELOPMENT	11,48	49	Linde AG	80,55
10	CHINA OVERSEAS LAND & INVEST	12,81	50	CHINA RESOURCES ENTERPRISE	81,21
11	K+S AG	12,97	51	Daimler AG	90,07
12	CHINA MOBILE LTD	13,87	52	LENOVO GROUP LTD	106,38
13	CHINA PETROLEUM & CHEMICAL-H	14,39	53	CHINA MERCHANTS HLDGS INTL	164,24
14	Fresenius Medical Care AG & Co.	15,36	54	Siemens AG	256,24
15	HANG SENG BANK LTD	15,59	55	SANDS CHINA LTD	-7.505,16
16	CHINA RESOURCES POWER HOLDIN	15,69	56	HSBC HOLDINGS PLC	-1.085,08
17	CHINA SHENHUA ENERGY CO-H	15,75	57	Deutsche Lufthansa AG	-999,27
18	Deutsche Börse AG	16,02	58	PING AN INSURANCE GROUP CO-H	-184,12
19	Continental AG	16,25	59	Infineon Technlologies AG	-120,46
20	KUNLUN ENERGY CO LTD	17,32	60	CHINA COAL ENERGY CO-H	-106,81
21	CLP HOLDINGS LTD	19,18	61	BAYER AG	-100,11
22	Münchener Rück AG	20,01	62	LI & FUNG LTD	-68,89
23	BOC HONG KONG HOLDINGS LTD	21,65	63	Merck KGaA	-52,76
24	POWER ASSETS HOLDINGS LTD	22,48	64	HUTCHISON WHAMPOA LTD	-43,71
25	MTR CORP	25,46	65	COSCO PACIFIC LTD	-42,96
26	Deutsche Post AG	26,99	66	HENDERSON LAND DEVELOPMENT	-42,75
27	BMW AG	27,12	67	CHINA LIFE INSURANCE CO-H	-35,04
28	Henkel AG & Co. KGaA	27,73	68	CHINA UNICOM HONG KONG LTD	-28,40
29	AIA GROUP LTD	28,37	69	CHEUNG KONG HOLDINGS LTD	-27,80
30	HENGAN INTL GROUP CO LTD	29,94	70	HANG LUNG PROPERTIES LTD	-23,37
31	CHINA RESOURCES LAND LTD	30,33	71	SINO LAND CO	-20,77
32	LANXESS AG	30,90	72	HeidelbergCement AG	-14,85
33	TINGYI (CAYMAN ISLN) HLDG CO	31,49	73	RWE AG	-14,77
34	HONG KONG & CHINA GAS	32,48	74	CATHAY PACIFIC AIRWAYS	-13,25
35	PETROCHINA CO LTD-H	32,99	75	E.ON SE	-9,26
36	SAP AG	34,18	76	CITIC PACIFIC LTD	-7,50
37	WANT WANT CHINA HOLDINGS LTD	34,38	77	Deutsche Telekom AG	-4,02
38	Beiersdorf AG	34,84	78	Deutsche Bank AG	-3,96
39	TENCENT HOLDINGS LTD	40,75	79	Commerzbank AG	-2,52
40	GALAXY ENTERTAINMENT GROUP L	41,55	80	ThyssenKrupp AG	-1,33
		Median		**15,47**	

***Figure 11**:* Ranking 2012 DAX30+HS50 ordered by Price-Value-Ratio cfrv.

4.3 Recommendation for DAX30 and HangSeng50 to Buy, Hold, or Sell

Finally, it should be very interesting what significant results the analyses will have onto the general recommendation Buy, Hold, or Sell addressed to investtors acting on the markets worldwide. For this reason again the commonly matured and used PER is compared to the new PVR cfrv (s Figure 12).

If the PER is used we have 34 companies that could be recommended as ‘Buy’ (from New World placed 1 down to Cosco Pacific placed 34), because their PER is 10 or lower which represents reported Earnings per Share of 10% or more related to their Share Price. 21 companies (Hong Kong & China Gas placed 60 down to ThyssenKrupp AG placed 80) have earned less than 5% of their Share price, the last 2 companies (Deutsche Telekom AG and ThyssenKrupp AG) have even recognized a loss in fiscal year 2012. So far those 21 companies should neither be bought nor held.

But if the newly introduced PVR cfrv is calculated and used to rank the companies listed at DAX30 and HangSeng50 the Ranking differs significantly. The recommendation ‘Buy’ is effective only for 8 companies (Volkswagen AG placed 1 down to CNOOC placed 8), because their PVR cfrv is 10 or lower that represents an increase in Shareholder Value in relation to the Share Price of at least 10%. So far the number of companies are suggested to be a good investment decreases from 34 (basis PER) down to 8 (basis PVR cfrv). Additionally, the number of companies that do not reach the hurdle rate of 5% increase in Shareholder Value – that is PVR cfrv 20 or even higher resp. negative) moves from 21 (basis PER) up to 58. Out of the view of investors who require at least 5% increase of Shareholder Value related to the share price those companies should then actually be sold.

Ranking 2012	DAX30/HS50 ordered by PER - still common -	PER		Ranking 2012	DAX30/HS50 ordered by PVR - new -	PVR cfrv
1	NEW WORLD DEVELOPMENT	3,50		1	Volkswagen AG	6,14
2	Volkswagen AG	3,66		2	IND & COMM BK OF CHINA-H	7,11
3	WHARF HOLDINGS LTD	3,70		3	BANK OF CHINA LTD-H	7,37
4	BANK OF CHINA LTD-H	5,26	Buy	4	CHINA CONSTRUCTION BANK-H	7,74
5	BANK OF COMMUNICATIONS CO-H	5,39		5	BANK OF COMMUNICATIONS CO-H	8,20
6	SUN HUNG KAI PROPERTIES	5,71		6	Fresenius SE & KGaA	8,25
7	HENDERSON LAND DEVELOPMENT	6,27		7	WHARF HOLDINGS LTD	8,59
8	CHINA CONSTRUCTION BANK-H	6,37		8	CNOOC LTD	10,72
9	IND & COMM BK OF CHINA-H	6,38		9	NEW WORLD DEVELOPMENT	11,48
10	Deutsche Lufthansa AG	6,52		10	CHINA OVERSEAS LAND & INVEST	12,81
11	SWIRE PACIFIC LTD-A	6,55		11	K+S AG	12,97
12	SINO LAND CO	6,71		12	CHINA MOBILE LTD	13,87
13	Daimler AG	6,79		13	CHINA PETROLEUM & CHEMICAL-H	14,39
14	Münchener Rück AG	7,60		14	Fresenius Medical Care AG & Co.	15,36
15	CITIC PACIFIC LTD	7,66		15	HANG SENG BANK LTD	15,59
16	CHEUNG KONG HOLDINGS LTD	8,26		16	CHINA RESOURCES POWER HOLDIN	15,69
17	Fresenius SE & KGaA	8,58		17	CHINA SHENHUA ENERGY CO-H	15,75
18	Continental AG	8,90		18	Deutsche Börse AG	16,02
19	CHINA PETROLEUM & CHEMICAL-H	9,04		19	Continental AG	16,25
20	Allianz SE	9,18		20	KUNLUN ENERGY CO LTD	17,32
21	CHINA COAL ENERGY CO-H	9,24		21	CLP HOLDINGS LTD	19,18
22	CNOOC LTD	9,33		22	Münchener Rück AG	20,01
23	BMW AG	9,34		23	BOC HONG KONG HOLDINGS LTD	21,65
24	CHINA SHENHUA ENERGY CO-H	9,38		24	POWER ASSETS HOLDINGS LTD	22,48
25	CHINA OVERSEAS LAND & INVEST	9,77		25	MTR CORP	25,46
26	K+S AG	10,03		26	Deutsche Post AG	26,99
27	BANK OF EAST ASIA	10,10		27	BMW AG	27,12
28	E.ON SE	10,17		28	Henkel AG & Co. KGaA	27,73
29	HUTCHISON WHAMPOA LTD	10,39	Hold	29	AIA GROUP LTD	28,37
30	CHINA RESOURCES POWER HOLDIN	10,50		30	HENGAN INTL GROUP CO LTD	29,94
31	CHINA MERCHANTS HLDGS INTL	10,53		31	CHINA RESOURCES LAND LTD	30,33
32	CHINA RESOURCES LAND LTD	10,70		32	LANXESS AG	30,90
33	LANXESS AG	10,71		33	TINGYI (CAYMAN ISLN) HLDG CO	31,49
34	COSCO PACIFIC LTD	10,76		34	HONG KONG & CHINA GAS	32,48
35	RWE AG	11,01		35	PETROCHINA CO LTD-H	32,99
36	CHINA MOBILE LTD	11,11		36	SAP AG	34,18
37	Deutsche Post AG	11,28		37	WANT WANT CHINA HOLDINGS LTD	34,38
38	HANG SENG BANK LTD	11,38		38	Beiersdorf AG	34,84
39	BOC HONG KONG HOLDINGS LTD	11,52		39	TENCENT HOLDINGS LTD	40,75
40	HSBC HOLDINGS PLC	12,10		40	GALAXY ENTERTAINMENT GROUP L	41,55
41	KUNLUN ENERGY CO LTD	12,10		41	SWIRE PACIFIC LTD-A	42,16
42	PETROCHINA CO LTD-H	12,20		42	BELLE INTERNATIONAL HOLDINGS	44,41
43	Infineon Technlologies AG	12,53		43	SUN HUNG KAI PROPERTIES	44,89
44	MTR CORP	12,59		44	BASF SE	45,63
45	Deutsche Börse AG	12,68		45	adidas AG	47,84
46	BASF SE	12,90		46	BANK OF EAST ASIA	53,24
47	CHINA RESOURCES ENTERPRISE	13,02		47	Allianz SE	59,88
48	Siemens AG	14,18		48	HONG KONG EXCHANGES & CLEAR	66,49
49	POWER ASSETS HOLDINGS LTD	14,26		49	Linde AG	80,55
50	HANG LUNG PROPERTIES LTD	15,06		50	CHINA RESOURCES ENTERPRISE	81,21
51	AIA GROUP LTD	15,29		51	Daimler AG	90,07
52	Fresenius Medical Care AG & Co.	15,47		52	LENOVO GROUP LTD	106,38
53	HeidelbergCement AG	15,76		53	CHINA MERCHANTS HLDGS INTL	164,24
54	GALAXY ENTERTAINMENT GROUP L	16,78		54	Siemens AG	256,24
55	Henkel AG & Co. KGaA	17,36		55	SANDS CHINA LTD	-7.505,16
56	Linde AG	17,76	Sell	56	HSBC HOLDINGS PLC	-1.085,08
57	CLP HOLDINGS LTD	18,80		57	Deutsche Lufthansa AG	-999,27
58	LENOVO GROUP LTD	19,83		58	PING AN INSURANCE GROUP CO-H	-184,12
59	PING AN INSURANCE GROUP CO-H	20,31		59	Infineon Technlologies AG	-120,46
60	HONG KONG & CHINA GAS	21,28		60	CHINA COAL ENERGY CO-H	-106,81
61	LI & FUNG LTD	22,72		61	BAYER AG	-100,11
62	HENGAN INTL GROUP CO LTD	23,68		62	LI & FUNG LTD	-68,89
63	BAYER AG	23,82		63	Merck KGaA	-52,76
64	TINGYI (CAYMAN ISLN) HLDG CO	25,22		64	HUTCHISON WHAMPOA LTD	-43,71
65	SAP AG	25,60		65	COSCO PACIFIC LTD	-42,96
66	BELLE INTERNATIONAL HOLDINGS	26,00		66	HENDERSON LAND DEVELOPMENT	-42,75
67	adidas AG	26,88		67	CHINA LIFE INSURANCE CO-H	-35,04
68	SANDS CHINA LTD	27,79		68	CHINA UNICOM HONG KONG LTD	-28,40
69	TENCENT HOLDINGS LTD	28,37		69	CHEUNG KONG HOLDINGS LTD	-27,80
70	Beiersdorf AG	31,12		70	HANG LUNG PROPERTIES LTD	-23,37
71	WANT WANT CHINA HOLDINGS LTD	32,03		71	SINO LAND CO	-20,77
72	CHINA UNICOM HONG KONG LTD	32,70		72	HeidelbergCement AG	-14,85
73	HONG KONG EXCHANGES & CLEAR	35,02		73	RWE AG	-14,77
74	Merck KGaA	37,48		74	CATHAY PACIFIC AIRWAYS	-13,25
75	CATHAY PACIFIC AIRWAYS	48,33		75	E.ON SE	-9,26
76	CHINA LIFE INSURANCE CO-H	51,25		76	CITIC PACIFIC LTD	-7,50
77	Commerzbank AG	71,97		77	Deutsche Telekom AG	-4,02
78	Deutsche Bank AG	103,82		78	Deutsche Bank AG	-3,96
79	Deutsche Telekom AG	-7,81		79	Commerzbank AG	-2,52
80	ThyssenKrupp AG	-1,69		80	ThyssenKrupp AG	-1,33

Figure 12: Recommendation DAX30+HS50 to Buy, Hold, or Sell.

5 Summary and outlook

Starting point of considerations about a standardised approach to measure and assess the Value-Performance is the fact that TOP-companies listed at matured stock exchanges worldwide use Value-Concepts for corporate management and often as well for the determination of the management‘s compensation. Information about those Value-Concepts are given in the IFRS-/US-GAAP-Annual Reports more or less detailed and traceable. As a matter of fact, the companies design their Value-Concepts very individually, wherewith actually comparisons of the Value-Performance are unfeasible. On the basis of the herewith introduced standardised approach ‚White Box‘-cfrv the attempt is set into practice to first determine the Value-Performance of companies and second to compare the results quantitatively. The new approach is accompanied by the intentional transition from the Profit-/Loss-Concept, which is mandatory in accounting (national GAAP as well as IFRS), towards the Value-Concept as at least an additional level of assessment. This is necessary and meaningful, because since the late 80s the Blue Chip-Companies worldwide additionally and voluntarily report about used Value-Concepts to increase the quality of corporate management and esp. to increase the attractiveness of their shares.

As a start the presented results for DAX30-companies are conducted to Ranking for the fiscal year 2012, where the companies are ranked on the basis of the new ratio Value-Rate cfrv: namely in order of the amount of their relative increase of Shareholder Value (Value Added resp. Value Destroyed). To assess the relation between changes in Value-Performance on the one hand and changes of Share Prices on the other hand the ratio Price-Value-Ratio cfrv (PVR cfrv) has been introduced. Analogous to the ratio Price-Earnings-Ratio (PER) that for years is used to try recommendations with respect to decisions of Buy, Hold, or Sell the PVR cfrv allows an additional evaluation about the considered and analysed companies with regard to the attractiveness of their shares on the basis of their Value-Performance. The new ratio PVR cfrv may have the potential to be used and established as ratio within the Financial Community in addition to the PER. The better accuracy reached by the PVR cfrv against the PER to assess the DAX30- and also the HangSeng50-companies has already shown the potential and the effects.

Despite thoughts about the future usage of the PVR cfrv the herewith presented first analyses and assessments of DAX30- and HangSeng50-companies should be seen as a kick-off to now roll out the developed standardized approach for measurement and evaluation of Value-Performance onto other Stock Exchanges and Share-Indices short-time. Actually, Bloomberg-data and SWOT-structure for the Index BIST30 at Stock Exchange in Istanbul as well as for the Index DowJones30 at Stock Exchange in New York are already prepared for further publications. Through the year 2014 the analyses and assessments of all leading Stock-Exchanges worldwide is intended, from Toronto (Canada) in the West to Wellington (New Zealand) in the East. Once originally done, the calculations and evaluations to Value-Performance worldwide should be executed and published periodically (annually, possibly as well quarterly) on the basis of current data. Step by step the Sub-Indices (e. g., in Germany MDAX, SDAX and TecDAX) of the leading Stock Exchanges worldwide should be included in periodical assessments and publications. Thus, the market transparency could be increased and decision-useful information could be addressed to the Financial Community as well.

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Part 1 Financial Management

B Financial support in the new-type urbanization

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Abstract

The article puts forward the connotation of the new-type of urbanization in the new period, the strategic significance of promoting new urbanization and then points out the dialectical relationship of financial support and the urbanization construction. Combined with the current status of financial support, this article will give corresponding improvement measures and suggestions for the orderly conduct of new urbanization construction.

Key Words

Urbanization construction, financial sector

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1 The connotation and significance of the new-type urbanization

1.1 The Connotation of the New-type Urbanization

Urbanization, the international general theory is that although connotation has certain difference, but the substance is same. Both put emphasis on that the traditional rural society is transforming to modern civilized society. Our urban system includes two parts: city and town, which play different roles at different levels. And the development of small towns is an important approach to promote urbanization in our country, using urbanization formulation in our country is more suitable for China's policies and regular practice.

Urbanization as the inevitable outcome of the modern industrial development, is the necessary rule of development of human society, it means the transformation process the agricultural population accounts for a large proportion of traditional agricultural society to the non-agricultural population accounts for most of the history of modern civilized society, which is an important symbol of modernization. It has brought us the urban and rural economy, politics, culture, etc. The transformation of social structure reflects the comprehensive change and development of the entire country or region.

The new urbanization construction has been elevated to the national strategic level in the Eighteenth National Congress of the CPC to make it be the key of the adjustment of economic structure and the transformation of the mode of development. Urbanization has become the only way for our country to solve the problem of "agriculture, rural areas and farmers", urban and rural dual differentiation. New more emphasis on quality of urbanization, breaking the previous urbanization path, adhere to the people-oriented, embodies the protection of farmers' rights and interests. Population concentration is only the surface characteristics of urbanization, the economic structure transformation, the change of production mode and life style is the inner motive power and connotation and essence of urbanization. Residents and change in the way of life, such as social organization, code of conduct, code of ethics and values, is the comprehensive result of urbanization. Therefore, the realization of urbanization construction, focus on urban and rural development as a whole, realization of the equalization of public service and the citizennization of farmers, rather than the past simple city building, make the unity of the resident status and treatment and enjoy the development opportunity.

The urbanization includes the transformation of the mode of production and way of life. The future of the countryside, on the economic front, agriculture is included in modern industrial system. An important characteristic of the modernization of agriculture is to realize the agricultural industrialization; Yeast in the field of social sector, the realization of the welfare of the rural and the urban community, strengthening infrastructure, guarantee the supply of low-rent housing and affordable housing, the realization of the equalization of public service and farmers' lifestyle transformation; Also the change of household registration is the form requirement. Therefore, the modernization of the countryside itself is more important than farmers moved to the city.

1.2 The Strategic Significance of Promoting the Construction of the New-type Urbanization

Educators Liangyong Wu pointed out: China's urbanization and new technology revolution in the United States are regarded as the main two great things affecting the process of human society in the 21st century. A major adjustment in the international economic pattern and critical period of our country is to build a well-off society in an all-round way, promoting the new urbanization has important strategic significance.

1.2.1 The Path for China to become a powerful economic country

A country which is going to achieve modernization should not only promote industrialization, but also promote urbanization. Developed countries become world power is the process of gradually improving the process of urbanization. Our country to achieve from economic superpower to economic power must work hard to promote the new urbanization, thus realize the modernization of the country.

1.2.2 Promote Healthy Development of National Economy

First, expand the domestic demand of urbanization, huge infrastructure and public service facilities and housing investment demand. Secondly, urbanization construction is conductive to realize agricultural modernization, the promotion of agricultural production scale, improve the efficiency of agricultural production, increase farmers' income, and increase the farmers' non-agricultural income. Moreover, urbanization is advantageous to the adjustment of industrial structure, promote move with commerce, catering, tourism as the main content

of consumer services and financial, insurance, logistics, etc as the main content of the development of the productive service industry.

2 The new city urbanization construction and financial support

2.1 Financial Support is Difficult to Meet the New Urbanization Construction

New urbanization contains huge capital requirements, including the construction of industrial parks, urban infrastructure, urban service industry, modern agriculture project, personal business loans, consumer spending and wealth management, and other aspects. Among them, the infrastructure construction is the hardware guarantee in the process of rural urbanization, the traditional pattern of infrastructure construction mainly rely on the government's financial support, but for the wide countryside of China, to synchronize, comprehensively promote the development of rural urbanization, just relying on the government's fiscal investment is unable to meet the development needs of today.

Urbanization and stimulating the economy in the past mainly depend on the expansion of government spending. In 2008 our country pushed 4 trillion yuan economic stimulus plan to maintain its rapid economic development in the subsequent years. But the price is loosened fiscal and monetary discipline. Local government financing platform and debt levels rised. According to the national bureau of statistics of local financing platform audit as a result, local governments default phenomenon occurred frequently at present, a lot of defaults is borrowed to cover up. In the form of new and old, there are some defaults postaged due to the project engineering.

With the deepening of the urbanization process and the growing demand for money, in recent years our country's economy estimation will be in the low growth, fiscal revenue is limited, local financing platform, debt repayment peak has come. In the next few years local government default will only grow, local government financial resources is difficult to meet the demand of huge funds, China development bank planning bureau deputy director Hu Dongsheng said urbanization construction funding gap of about 14.7 trillion yuan in the next three years, investing and financing capital demand of 25 trillion yuan in 2013 ~ 2015, the financial capital can only support the urbanization about one 5 of that new investment, obviously inadequate funding inhibits the development of urbanization in China.As a result, the financial industry have do something.

2.2 The Urbanization Construction and Dialectical Relationship of Financial Support

Financial support and urbanization construction are interdependent, promoting or restricting the interaction and dialectical relations.

On the one hand, the economic financial decision, the urbanization development inevitably leads to significant changes in the amount of financial supply and demand and structure in China: strengthening the urban energy in urbanization, water supply, transportation, communications, culture, entertainment and other urban infrastructure construction; Improve and perfect the housing, education, employment, medical care, pension and other urban public service system; Town business, especially a large number of small micro enterprises to develop production, expand and new urban consumer goods (clothing, cosmetic, media and other daily consumer goods and household appliances, automobiles, furniture and other durable consumer goods) requirements, are effective to expand the amount and scale of the demand for financial support, for financial institutions to push this business strategic transformation and strengthen the financial service innovation provides a new impetus.

On the other hand, finance as the core of modern economy, has a very prominent important reaction to the economy.

Finance in a modern economy, because of its special nature and function, is at the core. Modern economy is a market economy, market economy is essentially a kind of advanced currency credit or financial economy. Highlighting the importance of finance is the basic performance of the use of monetary value stream direction physical value stream, monetary funds movement guide material resources. As a result, it can not only through the mobilization, from the macroscopic guide a rational flow of social capital, adjusting and optimizing the configuration of social resources, and taking up and promoting the capital use efficiency which can also reduce the money on the micro transaction costs, exchange of convenience goods and materials, etc., in meet the urbanization construction financing, financing, improve fund use efficiency and benefits need to play a very important role in many aspects. In the current our country all levels of local government financial capital limited, unified urban and rural areas of the capital market is perfect and mature, such as background, financial

support for the importance of the construction of urbanization is all the more remarkable.

In addition, the financial support to promote the urbanization process of the people's livelihood improvement and development of the business. One is in support of employment and the rural labor transfer, urban and rural residents started the migrant workers migrant workers microfinance, business work joint guarantee loan, returning migrant workers and university student village official business loans and other financing business, continue to deepen financial support of employment and reemployment work 2 it is effective to explore "village changed" construction in urbanization way of financial support, promote rural residents production change the way of life. Financial support for the innovation of the way to solve the "village changed" the construction of credit into the bottleneck, to promote rural urbanization and urbanization of farmers has played a positive role.

3 Financial Support, Present Situation and Cause Analysis

3.1 Financial Support Status Quo Analysis of Urbanizati

3.1.1 The Rural Financial Organization

For a long time, China's rural finance main body is relatively single, mainly in rural credit cooperatives and postal savings bank as the main financial main body. Among them, the postal savings from rural idle cash, but little to grant loans, therefore, a large number of rural deposits are pulling away, aggravating the imbalance between supply and demand of rural finance; In addition, the low management efficiency of the rural credit cooperatives in our country, many problems exist in the management, and even some rural credit cooperatives in pursuit of economic efficiency, the compression of peasant household loans and switch to higher yields of commercial and industrial loans, a departure from the support of "agriculture, rural areas and farmers", result in unable to meet financial needs of rural economic life.

In small towns, the local government as the main body, the construction of urban infrastructure construction of urbanization development financial support is often restricted by revenue, and, due to the government department ,it does not have independent legal personality, so can't be as the main body, the commitment shall due to commercial Banks to pursue spreads, in the case of risk control, to maximize profit as a target attribute, can lead to the development of commercial Banks tend to focus on cities, while in rural areas rarely financial resources allocation, and even some almost not setting up branches in rural commercial bank. Even some of the commercial Banks set up branches in the rural areas, to provide credit support is also very limited.

3.1.2 The Support to Small and Medium-sized Enterprises Is Not Enough

Commercial Banks, especially large commercial Banks provide credit services access to higher standards. On the one hand, commercial Banks tend to prefer to choose some good economic efficiency, short production cycle, large scale enterprise loans, in order to get more interest income, on the other hand, for reasons of risk control, in the development of small and medium-sized enterprises due to information asymmetry, bank review regulation of average cost and marginal cost is higher, and because the rural financial environment is relatively poor, a relatively high risk is commercial bank lending to the rural small and medium-sized enterprises implement the principal cause of yishen ,

lend loan policy. In the medium and small cities and towns, enterprises channels of direct financing through the issuance of stocks is almost closed, and indirect financing channel is given priority to with credit because the bank have been hindered by the inherent operation mode, so small towns, many enterprises have to reach the purpose of financing with the aid of the folk lending market. Private lending to small and medium-sized towns in long-standing because of small and medium-sized enterprises find it difficult to get low cost in the formal financial institutions long-term loans, often can only rely on short-term loans flow to maintain the long-term development of the enterprise requirements, and due to the complexity of loan appraisal approval process, application condition is strict, cumbersome procedures, to miss the optimal timing of extension, often makes small and medium-sized enterprises not only affect the normal development of the enterprise, also increase the financial risk of the enterprise, the small micro enterprise in the case of unable to get loans, tend to seek private financing channels, however, due to the lack of regular folk financing evaluation system and credit supervision agencies, there is a greater credit risk, so the folk financial markets in solving some of the small and medium-sized enterprise financing problems at the same time, also brought a lot of financial credit risk. Therefore, in order to make the folk financial system provide guaranteed financial support for rural urbanization development, establish effective folk financial evaluation of the supervision system is an urgent problem.

According to the statistics, the initial capital of about 74% of small and medium-sized enterprises for their own capital, from family, friends, or risk investment capital of about 17%, about 9%, other sources of non-financial institutions financing and commercial loan proportion is almost zero; In the process of growth, self-raised funds account for about 30%, capital surplus accounts for about 27%, bank lending accounted for about 15%, the trade credit between enterprises accounted for about 8%, there also exist a larger gap. Thus, in the early stages of the development of small and medium-sized enterprises, and growth, is the lack of direct financial support of the financial sector, for the agricultural enterprise, is the difficulty of the commercial loan. Visible, financial support on the development of small and medium-sized enterprises have indeed a long way to go.

3.2 The Analysis of Causes

At present, due to the existence of the various factors and conditions, making the important role of financial support for the urbanization construction is also difficult to smooth, efficient, play out, sum up these factors or conditions, mainly include:

3.2.1 Lack of Urban Construction and Development Loans Subject

In accordance with the relevant regulations, administrative organization can't as the body of the loan, so the phenomenon, even with the financial sector to provide credit support for urban development projects, due to the particularity of urban construction projects, also hard to find the right loan principal. On the one hand, urbanization construction requires a lot of money, and on the other hand, financial institutions, investment desire difficult to achieve.

3.2.2 The Financial System Is Not Sound

Financial support service system is not sound, not perfect itself, one of the important aspects including financial policy support and service system is not sound, do not form a complete set, such as the lack of a clear tax breaks or preferential policies, such reserve requirement and interest rate management policy, financial institutions system, lack of urban grass-roots financial support and services, such as big Banks in the county branches, such as human resources configuration, the deficiency of the counties and townships slow development of small financial institutions, such as auxiliary financial services institutions, such as less credit inquiry, mortgage or guarantee agencies, financial services products system is not rich, not perfect, etc.

4 The Financial Support of Urbanization Advice

4.1 Master Policy Trends, Timely Adjust Support Policy

New-type urbanization is emphasised on people-oriented, which requires the financial institutions in the construction of the support of urbanization, to always adhere to the people-oriented and through reforms to promote comprehensive, balanced and sustainable development of urbanization, the "four modernizations synchronization", balanced and will support the urbanization construction and support industrialization, informationization, the organic combination of agricultural modernization. Always remain with the state of urbanization construction and development planning, policy, system and the corresponding reform measures and financial support to follow up timely, full service in terms of macro policies, the development of small town construction project by national macroeconomic regulation and control policy is relatively obvious, the influence of government investment progress, fiscal and taxation policy, land policy, the government platform regulatory policy of small town construction project has a significant effect. So Banks should strengthen the study of the central macroeconomic policy and anticipation, accurately grasp the policy trend, according to the policy tone in a timely manner to adjust the credit policy, hold good lending opportunity, actively adapt to the pace of national macroeconomic regulation and control. Government is the initiator and impulsion of small town construction, the bank should pay close attention to new trends of the governments at various levels of urbanization construction, strengthen the communication and cooperation with related departments.

4.2 The Small Bank Should be Advantaged into Full Play, and Promote the Development of Small and Medium-sized Enterprises

Organizing because of simple structure of the small bank service object with regional and community characteristics can maintain long-term close relations, to small and medium enterprises to obtain the relation between the public information. Small and medium-sized enterprises and commercial Banks tend to form between relational lending . Banks through various channels accumulate the relevant information, gradually familiar with the real situation of the borrowers, get credit resources; Enterprise can through a relational with a handful of Banks lending to get a loan discount. Channels of small and medium-sized Banks based on community, grassroots, more familiar with local conditions also has the power to vigorously develop the relational credit, due to

the town of small and medium-sized enterprise information hidden capital requirements and the characteristics of dispersion, lack of collateral, small and medium-sized enterprises, especially small private enterprises are more inclined to choose the control, the degree of intervention minimum way of financing, and private financial institutions has low cost, spontaneous incentive mechanism and control of risk identification, pricing, incomparable formal financing market in China a number of advantages, so the folk financial institutions is very suitable for small and medium-sized enterprise partners. The second is to promote the cooperation between all kinds of credit institutions. Encourage and guide the small loan companies and funds through their own funds pledge microfinance institutions, such as a support methods such as wholesale funding from large and medium-sized institutions, enhance their ability to lend, advantages and large and medium-sized institutions will be familiar with local situation of miniature institutions combined capital advantage, improve the level of capital in situ transformation. Three is to explore the development of both financial and non-financial multi-function organization, supply and market services. Such as reality, some members of rural economic cooperation organization has to provide the internal financing services, namely when members capital turnover difficulty, can be directly applied to cooperation organization for dispensing, and according to the bank in the same period class, interest rate with the capital cost. This kind of multi-function organization members to provide one stop service at the same time, also enhanced its own survival and development ability. Therefore, in the credit service system construction of rural urbanization, rural economic cooperation organization can be the financial function to expand into the overall consideration.

4.3 Agricultural Bank must be conscientious

The agricultural bank which is in support of China's urbanization construction activities, facing agriculture, rural areas and farmers, business operations, play a very important backbone role, it is decided by the party central committee and the national government according to the requirement of agricultural bank business development strategic positioning. Agricultural bank's financial support to the urbanization construction organically integrated into the "three rural" financial business, financial business coordination, balance development strategy, make agricultural bank in the process of promoting financial support for the construction of urbanization, which really play a role of the business advantages of uniting town and country. According to different competitors,

ABC to do foster strengths and circumvent weaknesses, the disadvantages, for different purposes of funding needs, research and development of new rural construction loans, loans to urban renewal, in loan and other related financial products. On the premise of risk control at the same time, according to the local characteristics of the new rural construction, it also develops targeted regional urbanization construction loan products.

4.4 Financial Institutions should find out the Breakthrough Point to increase the Intensity of Support

The urbanization construction is a long-term work which needs a lot of money for a variety of projects. Because of the uncertainty of the capital gains and local government elections in our country and the policy of discontinuous, it will also increase the risk of bank investment. Finally, if in the process of implementation of the urbanization construction investment, financial institutions, investment direction is too concentrated, there will be a huge potential risk. Therefore, financial institutions should be in the premise of adhering to the principle of "sex" conditions, according to their own business characteristics, actively exploring and finding a proper breakthrough point for the supporting the construction of cities and towns, optimizing the industrial structure, promoting industrial quality and competitiveness, is the urban economic scale level, the most important ways of sustaining development. In addition, the support of the people's bank of urbanization construction included in the agenda of the financial work, give full play to their role as the window guidance, the use of various monetary policy tools to guide commercial banks, rural credit cooperatives to put more money into the construction of small and medium-sized cities.

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Part 1 Financial Management

C Decentralized cost management in the automotive industry and guiding implications for the mid-sized supplying industry

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1 Introduction

After the mass production at the beginning of the 20th century and the “mass customization” in the 1980’s, the automobile industry finds itself in a new state of upheaval: By the year 2020, the supplying industry will take over development and production of the automobile manufacturers and through this could grow up to 70% of the value creation. The manufacturers will give up about 10% of the value added, but increase their output by about 35%. These findings come from a collective study, the “Future Automotive Industry Structure (FAST)”, by the Fraunhofer-Institute in Dortmund, IPA in Stuttgart, and Mercer Management Consulting (VDA 2004).

Considering the structure of the supplying industry, which is a mainly mid-sized economy, it isn’t optimally prepared for such an increase in responsibilities. In many small or medium sized enterprises, the management accounting is only focused by the upper levels of management, while the employees of the project management are insufficiently prepared for these new and complex business model. To help combat this problem, the workers of the middle-management need to become “Experts of their positions”. Using their specific know-how and knowledge, the middle management employees should become decentralized partner for cost-management. Project engineers in the responsibility of an “Internal Entrepreneur” could be responsible for cost performance. This article gives an overview of different supplying Tier types and there already achieved status in management accounting. According to the results of a Questionnaire suggestions for further developments are made.

2 Future trends of the automotive industry and derived impacts for the mid sized supplying industry

With 8.8 million jobs in both automobile manufacturers and supply companies, the automobile industry makes up about 15% of the world's gross domestic product (Mercer 2003, TWI Core Research 2000). Additionally there are new technologies, increasing complexity in automobiles, and the explosion of model diversity. (Rubenstein/Hopkins 2001, Heneric/Licht/Sofka 2005, Maxton/Wormald 2004) These changes will naturally increase the costs of production of automobiles. The automobile supply industry can profit greatly from this development. In total, in Europe alone, there will be about 600,000 new jobs available due to just automobile electronics. (Mercer 2003)

Due to the fact, that the emerging markets need further mobility, the mid-sized supplying industry is able to follow the OEMs around the world (follower strategy). While regarding the traditional markets like Japan, EU and NAFTA States a conservative resp. declining development becomes apparent the emerging markets like China, India and East Europe become more and more important. (PriceWaterhouseCoopers 2008a and 2008b) Further important markets are Spain, Brazil and the Czech Republic. Here, especially China and Brazil are to be mentioned with an high increase in production over the last years. Beneath an increasing innovation rate and an increased competition and cost pressure the automotive industry is challenged by realising the reduction of carbon dioxide (CO2) emission and new technologies. Here, first results have been achieved. However, they are not sufficient to reach the limit of 120 gram per kilometre defined by the EU starting from 2012. Altogether, the international auto shows in Frankfurt and Detroit show that the environmental topic, the electricity based mobility and the environmental orientation constrainedly implemented in the automotive supply industry by OEMs are still very important.

But what has happened to the mid-sized supplying industry over the last decades? Are they still able to perform with these possibilities on the horizon?

In the past, managerial accounting often played only a secondary role in the SMEs (defined as businesses with up to 499 employees and 50 million Euros in sales)(IfM 2007). Only a few companies with fewer than 100 employees have implemented operational and strategic instruments, which enable them to generate and analyze monetary data, also as information on quality and quantity. (Manegold/Steinle/Krummacker 2002, 1 and Hegglin/Kaufmann 2003, 359). The control function in middle-sized businesses will be perceived as the

job of the upper management (for the development see: Gaulhofer 1988, Klett/Pivernetz/Hauke 1996, Kosmider 1993, Leidig 2001, PriceWaterhouseCoopers 2007). According to a study of Berens/Püthe/Siemens studies from 2005, one fifth of the interviewed businesses have an organized controlling department. Most of these few companies also have responsible persons for accounting and other planning tasks, such as: liquidation planning or preparations for year's end. Examining the cost accounting practice in SMEs, the studies have come to a very important finding: In these companies, a full cost based design of the cost accounting system dominated (88%). Partial cost based accounting systems have a lower distribution (49%), and newer cost accounting methods, such as process cost accounting or target cost accounting, were barely used (Währisch 1998). Based on this gap between increasing management, requirements in the automotive supply industry and the rudimentary application of the managing instruments, a need for action is seen to exist. If the automobile industry doesn't change its tendencies, this causes problems for the mid-sized supplying industry. Therefore, it is essential to enable more persons on a lower level for a decentralized managerial accounting. Can members of the execution level, be responsible enough with the strategic planning and control to contribute to the success of the business as a whole? Employees can develop the efficiency potential in the short term through the control of variable elements of cost, and in the longer term through the impact of fixed cost blocks.

3 Results of a survey: What is the actual managerial accouting practice of different Tier supplyers?

For the identification of specific management recommendations (for different types of businesses) the SME research institute in Siegen in cooperation with the FOM, has formulated a questionnaire on the managing experience of automotive supplying companies (belonging to the "Automotive network Südwestfalen"). As a first step 253 enterprises were surveyed in all). It was sent by post and E-mail and obtained a return of 18.1%. It gathered information on a variety of subjects (turnover, number of employees, form of organization, sales structure, supply status, product program, and national/global sales orientation), the understanding of managerial and cost accounting, the appreciation of future development in the automotive sector, the management practice and the influence of different management methods (ie. target-costing, activity based costing, direct costing, performance measurement, benchmarking, balanced scorecard, etc.). Alongside the analysis of the operations management, the strategic management and the implementation of environmental management tools were also surveyed (existence of formal and functional objectives, competitive strategies, systematical innovations and environmental management and core competences were identified). It can be shown that a lot of the smaller businesses almost never directly supply the OEM and therefore, fall into the 3rd Tier of the businesses (47.0% of all enterprises).

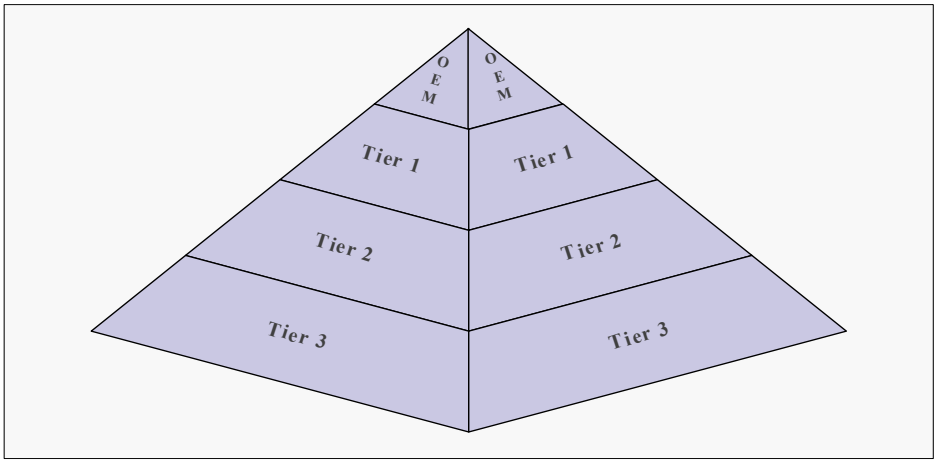

***Figure 1**:* Suppliers pyramide – Tier status, Wildemann (2003), p. 2.

Regarding the results of the Questionnaire, three types of enterprises could be differentiated:

The smaller businesses considered in the first group are companies with less than 50 employees and under 5 million Euros in sales (21% of the analyzed enterprises). These enterprises tend to be family businesses, which produce products mostly for domestic use. Normally, there is no direct connection between these businesses and the focal enterprise. These companies only invest a very small amount for research & development. They often sell commercially obtainable products, which are also available from competitors. Consequently there are no intensive business connections between the OEM and these component suppliers.

With the findings of the questionnaire, a typology of managerial and cost accounting was identified. Only 5% of the smaller supply businesses have a management department and a multitude of the strategic managing methods, are either uncommon, or the application of these methods would be fragmentary and imperfect. (Rautenstrauch 2003, 5 and PWC 2007) This is reflected in the lack of a strategic orientation, as well as in the small number of implemented strategic and operative instruments (Heupel/Hoch 2007, 6). The diffusion rate of the cost accounting lies around 85%. Other considerations of these findings show that only around 50% of the businesses carry out Full cost accounting. A further 35% of the analysed businesses indicated only sporadic cost accounting at irregular intervals. This relates similarly to the operational, as well as the strategic, knowledge of the management and the application rate of appropriate concepts. The next step for these businesses is to implement SWOT analysis, direct costing and the adoption of a performance measurement system.

The category of medium sized suppliers (with no more than 250 employees and yearly sales not to exceed 25 million Euros often have convenient plants, mostly located in foreign European countries. With their engagement in foreign industries these companies generally try to save money on product costs. The medium sized suppliers normally deliver raw materials and semi-finished products, as well as standard parts and can be characterized as Tier 3 companies (56% of the medium sized enterprises in this study). Derived, the goods of these enterprises were not directly supplied to the OEM. Instead of that, the delivered goods were supplied to a first or second Tier company and then assembled into the product for the manufacturer (Wildemann, 2003, 2).

These third level suppliers also deny higher capital investments and large investments in human resources for research and development activities. They neither have a R&D division available, nor do they put operational effort into this activity (IfM 2007). Within the operational use of managerial and cost accounting tools, they differ from smaller suppliers. They have a significant and resilient operations management, in which the practiced accounting system handles more valid calculations. (Heupel/Hoch 2007, 8) Modern methods of cost calculations, such as target-costing, standard costing or activity based costing are rarely used. (Schäffer/Steiners 2005, 322). Furthermore, the findings of the questionnaire and additionally embraced studies show that medium sized suppliers have performance measurement concepts integrated into their managing system, and regularly work with them. (Ossadnik/ Barklage/Van Lengrich 2004, 627) Once in a while with a strategic view, the SWOT analysis, a micro or a macro analysis and the competitive analysis are used in the strategic management of these enterprises, even for environmental aspects and existing developments. (Berens/Püthe/Siemens 2005, 191; Rautenstrauch 2003, 5, and Pfau/Jänsch/Mangliers 2007, 12) Only in about 40% of the cases are the cost and managerial accounting activities located in a separate controlling department. By using benchmarking and performance measurement, possibilities arise for comparing cost or profit centres or for comparisons with the strongest competitor. In the operational cost accounting, medium sized suppliers should not be exclusively based on past oriented data, but rather embrace standard costing and decision oriented management methods as well. The direct costing and process-cost calculation methods are suggested here. Thereby, the businesses can incorporate market trends and market prognoses into their calculations

The group of larger suppliers (businesses with less than 500 employees and yearly sales of 50 million Euros) are predominantly represented world-wide. They normally have more than one national manufacturing base, as well as many foreign plants, following the OEMs production sites around the world. Furthermore, large suppliers actively act on and search for future trends and, through intensive endeavours in the R&D department, prepare prospective, lucrative business areas and have implemented quality and environmental management systems and a wider toolset of conventional managerial accounting and environmental management accounting. Next to development of production and processing, targeted client applications are explored, to identify potential improvements or to develop corrections for certain

applications. Through the close contact with the OEM and the increasing connection in the value added structure of the OEM, the larger suppliers are labelled as Tier two companies or higher.

A characteristic example for a level 1 or 2 supplier is, to be linked to the online bidding platform and online information systems of the OEM. Through the new manner of communication, a two-way assistance, such as a data transfer, can be achieved. The transfer of the required data and information is handled through the Electronic Data Interchange (EDI). The prerequisite for this form of data exchange is the implementation of a complete ERP System. Such systems are implemented by a large portion of large businesses, working readily with high end solutions of ERP systems, such as SAP. Environmental information is provided by these systems and environmental key performance indicators are generated without extra engagement. The existing managerial accounting, in contrast with the small and middle businesses, is already convenient and strongly developed. The managing tasks were centralized; therefore management divisions were created and well educated. Even the position of the environmental protection officer is assigned. The research from Ossadnik, Barklage, and Van Langerich shows that about half of these people who are in charge have completed a course of study. 46% of these people have specialized accounting knowledge available, and 30% have specialized management knowledge (Ossadnik/Barklage/Van Lengerich 2004, 629). Therefore, it can be shown that the required Know-How is available and also that the handling of strategic methods is well-established and familiar. 85% of large businesses develop a budgeted balance sheet, which is one of the first strategic orientations of business (Berens/Püthe/Siemens 2005, 188 ff). Furthermore, the business strategies were determined for the next 2-3 years. Also, these suppliers have a readily available performance measurement system.

Upshot: Large suppliers are better-positioned in the operational and strategic management than the former mentioned groups of the supplying industry. They collect relevant data continuously and evaluate it promptly. Furthermore, large suppliers work, unlike small and medium suppliers predominantly with direct costs with a dissociation of variable and fixed costs. Separate fixed cost blocks are dealt with and therefore the calculation of marginal costs and a detailed profit and loss table for all products and customers is possible. Accordingly, the implemented instruments generate significant and reliable cost and environmental data. However, further strategic management methods are advised, the implementation of which will seem reasonable from the view of the changing market conditions and the resulting change and challenge.

4 Conzeptional development: Decentralized Cost Accounting

Regarding these findings there is a specific need for improvement within the group of smaller enterprises. Therefore the already mentioned qualification of decentralized teams and divisions is necessity. The project engineer as the coordinator of both the project realization and the selected employees get the authority to dictate through this decentralization as they are experts in their job in terms of cost-management. It succeeds based upon their input and actions to increase the value added. This value added comes from their use and guidance by the use of indicating instruments which allow them to also directly participate in the company's success. Intrinsic and extrinsic motivation displays these workers in in-house entrepreneurship and weaves them tightly together in moments of stimulation. By allowing workers this bit of freedom and allowing engineers to be a bit more freeform as opposed to smothered by a single, oppressive, centralized command, the following benefits are gained:

- A better work environment,
- A better transfer of information and employee suggestion scheme,
- A higher state of preparation of the employees and higher activity in learning circles,
- Active searches for new technical innovation,
- Increased cost awareness and increase in resource efficiency,
- Reduction in absence and labor turnover rate.

As an example of one decentralised cost accounting toolset the employees would be trusted to create the direct costing. The core of this concept is the similar to other plan cost accounting systems. From the marginal cost inspection, an improved decision for the reasoned choice and the resolution choice as well as the setting of a bottom price results. This set cost will be added into the element of costs, and then placed before the marginal income. The difference between returns and variable target costs must exceed the profits of a fixed cost block. The advantages of this concept are as follows:

- Through the prevention of the full cost accounting attributive defects, the preparation of strategic decisions through the cost accounting concept are made possible. Fixed costs are not detracted through a proportion of control, and can be gradually attributed to a fixed cost consideration that is fair according to the input involved.
- Through the exchange in angle from the actual cost accounting to differentiated plan cost accounting, the philosophy change from retrospective control to control and management-supported forward controlling will be supported.
- The current and contemporary analyses of the current returns matched with the current costs delivers decision relevant information for bettering processes in the sense of continuous improvement.

The control of a decentralized cost management system would be oriented on theoretical approaches from Pinchot, Wunderer, and Kuhn. These concepts defends a business philosophy, that being that the worker is seen as a partner of the value added. The prerequisite to this plan is that the company gives the employees enough room to make their decisions, but also, that the decisions made by the employees are acceptable. Only with widely accepted congruence in the range of responsibilities and areas of authority will employees be seen as “Joint venturers” with the appropriate amounts of power. The instances of risks are indeed increased by this transference of competence. While in the classic hierarchy there is room for some variance in explicit job descriptions through various company politics, true internal entrepreneurship requires extensive freedoms that would not be covered in such a draconian system. It is obvious that employees are an integral measurement on social competence and business understanding. Free will and trust are the main components of a decentralized control scheme for a business and forming a good social network, and through this social network, the employees will produce better results without a direct correspondence to money.

5 Conclusion

Through a strategic decentralization, smaller organizations should act responsibly in market-like manner with their own responsibilities and goals. These smaller portions of a larger organization need backing by a much larger company orientation on cost and profit structures. These smaller portions will then open multiple small and middle-sized businesses to enter the marketplace and grab a larger share. By analyzing a current large organization that has been decentralized and controlled by smaller independent project teams, it was found that the project teams carried out an important role in the decentralization of the business. At the same time, it is important to that this concept is implemented with proper regards to each branch's responsibilities, competence, and the proper deferment of responsibilities to the appropriate control levels.

The furthering of the employees succeeds based on a few select key qualifications. Employees with an extensive skill set to fall back on as well as having a good record with the company are often considered as employees that have the key qualifications to be both employees and partners. An Intrapreneuer comes with: design competence, management competence, and social skills. Signs of good design competence are good character, good problem solving skills, and being highly motivated. The signs of good management competence are being oriented to efficiency, goals, and appealing to customers and recipients, and incorporating these ideas into the solution. The suggested concept maybe enables the smaller supplying industry to enter bigger supply chains. They are able to perform - even in the here discussed business case 2020.

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Part 2 Environmental Management

D Innovation research on river basin ecological compensation mechanism from the perspective of transaction costs[1]

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Abstract

Our country's existing river basin ecological compensation research mainly focuses on the research of compensation standards and compensation modes, while less on the research on transaction costs. Transaction costs directly affect the operation efficiency of river basin ecological compensation mechanism, and then affect people's motivation to protect water resources. Based on the definition and analysis of transaction costs in river basin ecological compensation, we put forward some innovative suggestions: firstly, on the selection of compensation standard, the change of water resources value should be accurately determined, while the relative costs should be controlled. Secondly, as to compensation modes, "club" model is a good choice to determine reasonable scales and simplify compensation relationship. Thirdly, the enthusiasm of the non-profit social organizations should be motivated.

Keywords

river basin; ecological compensation; transaction costs; mechanism innovation

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1 Introduction

River basin ecological compensation mechanism is a new mechanism to improve river basin ecological environment in recent years. The current studies of river basin ecological compensation mainly focuses on issues like the selection of compensation mode, measurement of compensation standard and definition of compensation object. These studies are intended to solve the critical problems of river basin ecological compensation: "compensation standard" and "compensation direction", which are the key link in the establishment of river basin ecological compensation mechanism. But in the process of the organization and implementation of compensation mechanism, it will produce some "additional cost" which has no direct relationship with the ecological protection. It is often referred to as the "transaction cost" in economics, and blocks the normal operation of the ecological compensation mechanism to a certain extent.

There are many domestic and foreign studies on transaction costs, which mainly focused on the definition of transaction costs, measurement and application, etc. Studies on the application of transaction cost are mainly concentrated on comparison and evaluation of transaction cost and efficiency and how transaction costs should be reduced[1]. When river basin ecological compensation mechanism is in operation, high transaction costs will reduce the efficiency of the mechanism, which is adverse to the realization of the objective of river basin ecological compensation. At present, there are few studies of transaction cost in river basin ecological compensation. On the basis of relative studies, this research defines the transaction costs of river basin ecological compensation and innovates river basin ecological compensation mechanism in several aspects, so as to provide theoretical basis for the building and implementation of watershed ecological compensation mechanism.

2 Definition of the concept of transaction costs in river basin ecological compensation

Transaction cost theory is still in the stage of exploration and development; many scholars have defined the connotation of the transaction costs in their own way, but without a unified point of view. Coase defined transaction cost mainly as the negotiations and signing expenses occurred in every transaction on the market. Williamson defined transaction cost as "costs of economic system", including transaction cost in a given system, as well as the cost to establish, maintain or change the basic institutional framework of the system. Zhang Wuchang defines transaction costs as all the costs not directly occurred in the process of material production[2-4].

River basin ecological compensation is a mechanism to protect the watershed ecology resources during the application of the resources, which charges fees for damage behaviors and compensate protective behaviors of river basin ecological environment. In this way, the costs of damage and the benefits for protection both rise, which will help restrain damage behaviors and promote protective ones. River basin ecological resource is a kind of quasi- public goods, which features great externalities. The essence of river basin ecological compensation is the internalization of the externalities in the application of river basin ecological resources, which will overcome the market failure in resource usage and protect river basin ecological environment. The basic principles are “those who cause pollution shall govern; those who are benefited shall compensate”. The key of river basin ecological compensation mechanism is to determine the problem of “Who compensate whom?” and “How much to compensate?” The stakeholders should be organized and reach an agreement on the mode and standards of compensation. During the implementation of the agreement, the indicators of compensation standard need to be monitored; the arising disputes need to get coordinated. Even the whole process needs to be supervised. All the expenses arise from the above aspects are transaction costs. Therefore, the transaction costs in river basin ecological compensation can be defined as the costs for organization, implementation, coordination and supervision except for the compensation amount in the operation of river basin ecological compensation mechanism. These transaction costs are related to the number of compensation instead of compensation amount. The transaction costs in river basin ecological compensation have some distinctive features: (1) More supervising and guarantee costs from the government. River basin ecological resource is quasi-public goods. It is non-exclusive but not non-

competitive. In order to achieve efficient allocation of resources, more intervention is needed from the government. (2) High coordinating costs for disputes in compensation process. Because of lack of relative laws and regulations, river basin ecological compensation generates higher costs for agreement design and coordination, which is not conductive to the effective implementation of the compensation mechanism. Therefore, relevant laws and regulations and the safeguard mechanism still needs to be established and improved. (3) Different scope of transaction costs in signing of agreements. General transaction costs include potential loss for making concessions to reach an agreement, for example concessions on price. However, for river basin ecological compensation mechanism, standards of water quality and quantity become major issues in negotiation. There are national standards for water quality and quantity, which are not flexible. Therefore, the potential loss for making concessions is not included in river basin ecological compensation TC.

3 Content of transaction cost in river basin ecological compensation

The goal of river basin ecological compensation transaction cost analysis is to evaluate and reduce transaction cost, which could help ensure the smooth implementation of river basin ecological compensation mechanism. The transaction costs in river basin ecological compensation mainly include costs for organization, water quality and quantity, monitoring disputes, arbitration, supervision and maintenance.

3.1 Organization costs

In river basin ecological compensation, organization costs include costs to identify compensation parties, as well as the costs for input of manpower, material and financial resources in drafting and formulation of relative compensation terms and agreements. Identifying compensation parties means the identification of the main bodies that provide and accept the compensation. The compensation relationship is bi-directional. Both parties can be administrative departments, or concrete users of river basin ecological resources. The former is mainly various areas in governmental compensation divided according to administrative departments. The latter is mainly the compensation relationship existing among various microcosmic body in market compensation, such as the upper reaches polluting enterprises and the lower reaches residents. The drafting and formulation of relative compensation terms and agreements mean the selection of standard water quality and the level of water quality, as well as the calculation method of compensation amounts.

Besides the direct cost, organization costs shall also include the corresponding occupation of manpower resources, material resources and financial resources, as well as the opportunity costs caused by occupation of time. Normally direct costs are easier to measure and valued, while the indirect costs are relatively difficult to calculate.

3.2 Monitoring costs of water quality and water quantity

Determination of river basin ecological compensation standard is a key link of river basin ecological compensation. The final direction and amount of compensation should be determined by monitoring of water quality and quantity indicators, whose costs belong to transaction cost in the implementation stage. The transaction costs in the implementation stage also include the establishment of the monitoring station, purchase of monitoring equipment;

costs exist in monitoring and data analysis, etc. However, costs existing in the establishment of monitoring station and purchase of monitoring equipment are not totally for river basin ecological compensation. Therefore, only a part of the above costs should be included in the river basin ecological compensation, which is difficult to accurately measure. The costs happen in the monitoring and data analysis for the implementation of a certain river basin ecological compensation agreement is relatively easy to measure.

3.3 Disputes arbitration and negotiation costs

In the operation of river basin ecological compensation mechanism, disputes and contradictions are inevitable between the various stakeholders, which leads to the establishment of a consultation platform to deal with these problems. Some management institutions are needed for the guarantee of the ecological compensation going to the indemnitee. The costs for the establishment, operation and maintenance of the consultation platforms belong to the transaction costs of river basin ecological compensation.

3.4 Supervision costs

In order to ensure the smooth progress of the agreement, the two sides of the agreement need to supervise each other's actions. Governments supervise the implementation of river basin ecological compensation agreement, whose costs include establishment of coordination and management organization, daily expenses and pay of personnel, etc.

4 Innovation of compensation mechanism based on transaction cost

The eventual purpose for studying transaction cost in river basin ecological compensation is to reduce transaction cost and make the implementation of river basin ecological compensation mechanism more efficient. The innovation study covers mechanism principles, compensation subjects, standards and modes, etc.

4.1 Innovation principle

To establish river basin ecological compensation mechanism, we should first define compensation principles, modes and standards, and supervise the implementation of the mechanism. The basic and general principle is “those who develop, shall protect; those who damage, shall rebuild; those who are benefited, shall compensate; those who pollute, shall pay.” The purpose of establishing river basin ecological compensation mechanism is to protect and improve ecological environment of river basin continuously. System innovation from the perspective of transaction cost is conductive to the smooth implementation of river basin ecological compensation mechanism. Reducing transaction costs can reduce social cost and realize the effective utilization of resources. River basin ecological compensation mechanism should adapt to social and economic environment. Different watershed environment needs different compensation mechanism. System innovation of river basin ecological compensation should reduce transaction costs to the minimum extent. This can be considered from three main aspects of transaction costs in river basin ecological compensation: the specificity of trading goods and assets, uncertainty of transaction and the frequency of transaction. The assets invested in transactions do not have market liquidity, or the costs spent on assets can be hardly returned or changed in application when the agreements end. This is called the specificity of trading goods and assets. The higher the degree of specificity, the higher transaction cost will be. Such as hydrologic monitoring equipment used in river basin ecological compensation, which is expensive but has lower value in other ways. Generally the state will pay for this part of the input. Transaction uncertainty is the main reason for the existence of transaction costs, which refers to the occurrence probability of various risks in transaction. Human’s rational limitation makes it impossible to predict the future, especially when transactions happen in the situation of asymmetric information. Therefore, both parties safeguard their own interests through the contract. The rising of uncertainty will cause the rise of negotiation and supervision costs,

leading to the rise of transaction costs. In addition, the amount of the transaction costs is directly related to the frequency of deals. If the deals happen more frequently, transaction costs will rise too.

4.2 Innovation of compensation subjects

The indemnitee provides ecological services and deserves compensation. These ecological services include rebuilding ecological environment and preventing damage to river basin ecological environment. Therefore, the main body of river basin ecological compensation can be government organizations, enterprises, individuals, etc. According to river basin ecological compensation practices and research at home and abroad, the main body of river basin ecological compensation is mainly the government and the market. From the historical perspective, main body is changing from the government to the market. As river basin ecological resources are quasi-public goods, the main body cannot be the market completely, because in the provision of public goods, there will be market failure. Therefore, the innovation of river basin ecological compensation subject lie somewhere in between. With bloated sectors, the government always generates higher administrative costs managing special funds. As an independent subject, the market will likely cause government failure fixing the price in river basin ecological compensation mechanism. And some nonprofit organization under the guidance of the government is a rational choice on the supervision of special funds in river basin ecological compensation mechanism. NGO(nongovernmental organization) mode takes the nongovernmental organizations as the main actors in river basin ecological compensation, which have active cooperation with relevant departments or the compensated party through funds compensation, real objects compensation and intellectual compensation. The Yangtze river project in Donating lake sponsored by Changsha project department of the world wide fund is a very classic case. Ever since the beginning of this project in 1999, it successfully protected ecological environment and increased the farmers' income through encouraging and helping lake district farmers to return farmland to lake, developing alternative livelihoods, and carrying out community co-management. NGO shares equal status with the farmers, which makes it more acceptable. Through the cooperation with the government, NGO creates a bridge between the government and farmers, making the compensation easier. NGOs have many advantages like high efficiency, good flexibility, introducing the foreign resources easily and diversity of working patterns. They can reduce

the workload of the government in river basin ecological compensation, which makes it an effective way to protect ecological environment. But the mode needs perfect support from environmental law system. Currently, NGO participates in domestic river basin ecological compensation to a small extent and scale, which makes it difficult to undertake the tasks of ecological protection alone. It always participates as the assistant to governments and markets.

4.3 Innovation of compensation standard

The measure of compensation standard is a key link of river basin ecological compensation mechanism. Accurate and reasonable compensation standard is the basis of internalization of different regional ecological externality, which is directly related to smooth implementation of compensation mechanism. The existing river basin ecological compensation standards are mainly based on cost and ecological service value. The main calculation methods include total-cost method, replacement cost method, the method of willingness to pay, the method of water environmental capacity loss value, water footprint analysis method and price of water resource method. In order to insist on the principle of fairness, many factors and indicators are taken into consideration, which leads to great difficulties in the actual calculation and higher costs. The reality is different from theories and research. What is feasible in theory is not necessarily practical in reality. For example, the calculation of the right to development. Water quality is the direct embodiment of river basin water resources value and important basis of river basin ecological compensation standard. There are at least 20 indicators for professional evaluation of water quality, which will cause great transaction costs if thoroughly measured. Besides, the executors need to manage the collection, processing and supervision of these indicators, which will increase learning costs for mechanism operation. Thus some principles should be insisted on in the selection of river basin ecological compensation standard, including enough information enclosed, and higher value than the transaction costs caused during the acquisition the information. At present, water quality and quantity are often chosen as compensation standards in river basin ecological compensation. The factors influencing water quality shall include ammonia nitrogen, chemical oxygen demand (cod) and visual indicators such as color, smell, etc. This can help determine the change of water resources value while saving too much cost.

4.4 Innovation of compensation mode

On the basis of the main body, compensation modes can be divided into market and administration compensation, market compensation and quasi-market compensation, etc. Each mode has various organizing patterns. Transaction cost has been an important factor in the efficient operation of each compensation mechanism. Transaction cost can be referred to as system cost to some extent. Proper system arrangement can reduce transaction cost and make the operation more efficient. Mr. Zhang Wuchang once took the buffet as an example to illustrate transaction cost [5]: Only paying a fixed charge can consumers heartily enjoy dinner in the cafeteria. Regarding food free, people always eat as much as possible, until the marginal utility of the last bite turns zero. While the marginal cost producing the food is obviously larger than zero. The theory of the buffet is to save customers' costs and the costs calculating each customer's consumption. The more complicated the system is, the higher the transaction costs will be. This case naturally leads us to "club" pattern, which can reduce transaction costs. The co-construction and sharing mode in river basin ecological compensation belongs to "club" pattern. In this mode, river basin ecological resources belong to a group of a certain range, which can reduce management costs in river basin ecological compensation. This club shall feature: (1) the club pays compensation as a whole according to the consumption of resources to the government or NGOs. (2) There is a limit to the size of the club. Too large size will lead to higher supervision costs. Appropriate scale is easy for the internal management, internalizing transaction costs. According to the study of economic and social scientists, transaction cost increases along with the enlargement of management scale. River basins often cover wide regions, some of which are across several provinces. The area is divided according to the above illustration. The lower reaches of the river is influenced by many areas in the upper reaches, which leads to the compensation relationship between the lower reaches and many areas in the upper reaches. This kind of compensation relationship needs to be simplified in management. This step by step compensation mode only considers compensation of adjacent areas, with no violation to basic ecological principles. The lower reach uses water and compensates to the upper reach according to the compensation standard. Step by step, the compensation will go to the water source. There is practical exploration of this mode, such as Dawin river basin upstream and downstream agreement compensation pilot.

5 Conclusions

Content definition is one of the key problems in the transaction cost study, with no unified opinion at home and abroad. On the basis of transaction cost theory, this thesis puts forward innovation suggestions on various factors in the establishment of river basin ecological compensation mechanism, with the purpose of reducing transaction costs and increasing implementation efficiency. It is reasonable in theory, but in reality it is still difficult. More exploration is needed in transaction cost study of river basin ecological compensation.

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Part 2 Environmental Management

E Research on influence factors of the enterprise environment accounting information disclosure level – experience data of manufacturing and mining listed company in Shandong Province

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Abstract

The authors take 63 manufacturing and mining listed company in Shandong province as research samples in this paper, use empirical research method, and analyze factors that affect the enterprise environment accounting information disclosure level from the company's financial condition, management structure, industry, and the regional differences .The empirical results show that: the company size and the enterprise environment accounting information disclosure level are positively related. Profitability and the enterprise environment accounting information disclosure level negatively correlated. The more serious the pollution of the enterprise, the more tendency environment accounting information discloses. Factors such as equity concentration, the proportion of independent directors, CEO and general manager as two separate, regional difference and other factors have no significant effects on the enterprise environment disclosure level.

Key Words

Environment Accounting Information; Influencing Factors; the Empirical Research

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1 Introduction

Environment problems are increasingly prominent with the rapid development of economic. The natural environment is polluted 80% from enterprise according to statistics. We can see enterprise production and operation activities will increasingly associate with environmental problems. On one hand, the enterprise must actively participate in pollution control and the protection of the ecological environment in order to protect their image, On the other hand, enterprises need to disclose environment accounting information in order to satisfy investors, management department and other stakeholder's information needs. We take 63 manufacturing and mining listed company in Shandong province as research samples in this paper, use empirical research method, and analyze factors that affect the enterprise environment accounting information disclosure level. Thus we put forward the more targeted measures to improve the environment accounting information disclosure level.

2 Literature review

Papers from F. A. Beam (1971) and J. T. Marlin (1973) mark the start of the environment accounting study as representatives of the academic articles published. Overseas scholars ‘s study on environment accounting information disclosure focus on the influence factors such as company size, performance and debt level and ownership structure, etc. Dierkes and Coppock (1978), Trotman and Bradley (1981) by empirical study found that: the company size and environmental information disclosure positively correlated; However Lynn’s study (1992) showed, Company size is not significant influence on environment information disclosure. Anderson and Frankle (1980), Belkaoui (1976), by empirical study found the company performance and environmental information disclosure positively correlated; However, Freedman and Jaggi (1982), Ingram and Frazier (1980), draw very opposite conclusion through the research, the company performance and environmental information disclosure level is inversely related. Fergusonetal (2002), Mitchell and Jason (1995) found that debt level and information disclosure level are positively correlated. According to Jensen (1986), Meek and Gray’s study (1995) debt level and voluntary disclosure was a negative correlation. Scholars basically agree with that the more dispersion shareholding, the more tendencies they disclose environment accounting information.

Domestic researches on environment accounting information disclosure are mostly normative. Some literatures are only descriptive statistics although empirical research has been carried out, the empirical researches on influencing factors to environmental information disclosure level are less. Tang YaLi‘s empirical research (2006) results show that the company size, enterprise performance and environmental accounting information disclosure level are positively related, taking 60 listed companies in Shanghai and Shenzhen stock exchange as the research object, selecting the environment information from 2001 to 2002 annual report of the board of directors .Li Wanjin, Kuang Xiaolan and Gong Guangming (2008) found factors such as the company size, the company performance, legal person share ratio on the listed company had significant effects on the environment information disclosure level, however, factors such as asset ratio and the share concentration ratio, and the proportion of the independent directors had no significant influence on environment information disclosure level, taking 201 listed companies before 2004 in Shanghai stock exchange as the research object. Meng Liyuan’s Study(2010) found that important factors influencing on environment information disclosure

level include Whether an audit committee, director of the share of ownership, chairman of the board and general manager whether concurrently ,taking heavy pollution manufacturing industry companies in Shanghai stock market for samples.

3 Theoretical Analysis on Factors and the Research Hypotheses

3.1 Enterprise scale

The greater size of the company, the more it has to raise external funding. Thus large companies are more vulnerable to attention by parties outside such as government regulatory agency, environmental groups, media, and other social group. They have more responsibility for disclosing environmental information, to reduce agent costs because of information asymmetry and resulting to gain public support. Here is the first hypothesis:

H1, the company size is positively related to environmental accounting information disclosure level.

3.2 Profitability

Higher earnings power enterprises are willing to disclose more information according to the signal transmission theory; so that they will be distinguished those with poor profitability and their stock value will not be underestimated. These companies will attract more investment. Here comes the second hypothesis:

H2, Profitability is positively related to environmental accounting information disclosure level.

3.3 The Proportion of Independent Directors

The independent directors of the company take on supervision and management behavior of the management. Independent directors who often perform their duty will make management disclose voluntarily more information including environmental accounting information. Chen and Jaggi (2000) thought that independent directors made board of directors be more responsible for investors, reduce manager's asymmetric information advantage, and disclose more specific information. This article puts forward the third hypothesis:

H3, the proportion of independent directors is positively related to environmental accounting information disclosure level.

3.4 Stock Equity Concentration

The higher the ownership concentration, the easier the listed company is controlled by big shareholders. High equity concentration means management has enough voting rights to manipulate the chairman, director and executive, so

as to reduce the environment information disclosure degree. La Porta (1999) put forward that the controlling shareholders may pursue their own interests and hide information, carry out insider trading and damage the interests of small shareholders in company with high share concentration ratio. In general, the higher ownership concentration is, the lower information disclosure level. This article puts forward the forth hypothesis:

H4, ownership concentration is negatively correlated to environmental accounting information disclosure level.

3.5 The Chairman Acting as General Manager Concurrently

The chairman in the enterprise is supervision and the general manager is the status of supervision, the enterprise internal control degree will reduce if the chairman's supervision function merges into the general manager's. Molz (1988) found that in the companies, whose chairman acts as general manager either, environmental information voluntary disclosure level obviously is lower than the companies, whose chairman and general manager are respective. Thus this article puts forward the following assumption:

H5: chairman of the board of directors acting as general manager concurrently is negatively correlated to environmental accounting information disclosure level.

3.6 Regional Differences

The economic developed area will develop more environmental laws and regulations relative to the less developed areas, pay more attention to enterprise environmental pollution and management situation, and force firms to disclose more specific environmental accounting information. This article puts forward a hypothesis:

H6, the economic developed areas tend to disclose more environment accounting information.

4 Study Design

4.1 Sample Selection and Data Sources

This article selects the manufacturing and mining listed company of Shandong province as overall samples from 2009 to 2010, in Shanghai and Shenzhen stock exchanges, which does not include the ST and * ST companies whose financial conditions deteriorate ,and those whose dates are missing, so there are 63 companies , 126 samples in total for two years.

Table 1 is the industry distribution according to "industry classification standard of listed companies" published by China Securities Regulatory Commission in 2001, to find out the influence of the enterprise environment accounting information disclosure level from industry differences.

***Table 1**:* Industry Distribution

Industry	Number	Percentage	Industry	Number	Percentage
extractive industry	2	3,17%	Non-metallic minera products	6	9.52%
Chemical materials and products manufacturing	10	15.87%	Metals melting and rolling processing	4	6.35%
Pharmaceutical manufacturing	5	7.94%	chemical fiber industry	2	3.17%
Transportation equipment manufacturing	7	11.11%	Paper and paper products	3	11.54%
Plastic manufacturing	1	3.85%	Textile industry	3	11.54%
General machinery manufacturing	5	19.23%	Electronic components manufacturing	2	3.17%
Special equipment manufacturing	3	11.54%	Beverage manufacturing	2	3.17%
Print	1	1.59%	Food manufacturing	1	1.59%
Electrical achinery & equipment manufacturing	5	19.23%	Rubber manufacturing	1	1.59%

The financial data of this study (e.g., return on net assets, etc.) and other indicators (such as: ownership concentration, etc.) are from GuoTaian Database, and are checked with the annual report. Dates such as, environmental accounting information disclosure index, CEO and general manage combiner, the proportion of independent directors, the natural logarithm of the total amount of assets are processed by manual collection from the public annual report.

4.2 Variable Design

4.2.1 The Dependent Variable: Environmental Accounting Information Disclosure index (EAID)

In this paper, the environmental accounting information disclosure index is used to reflect the level of enterprise environment accounting information disclosure. Just as Meng Fanli put it, environmental accounting information disclosure can be divided into two types: environmental financial information and environmental performance information, that is to say, the environment accounting information that the enterprise should disclose includes not only the financial information expressed in money, but also some environmental performance information not expressed in money, such as the implementation of environmental laws and regulations, environmental quality and pollutant utilization, etc. Combining with all kinds of related research results, using the method of content analysis, this paper offers a table of the enterprise environment accounting information disclosure as follows.

Table 2*:* Score Critical Table of the Enterprise Environment Accounting Information Disclosure Index

Types of Environmental accounting information	disclosure items	score	instructions
Implementation of Environmental regulations	achievement and the reason why not to Implement	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
Environmental quality	situations about discharging pollutions	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	standard- reaching rate of Main environmental quality indicators	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	Pollution accidents	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1point, no description 0

Environmental governance and pollutants use	pollution control and governance	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	Personnel of environmental governance and detection	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1point, no description 0
	Pollutants recycling	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	Other pollution control measures	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
Financial information related to environment	environmental protection grants and subsidies	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1point, no description 0
	"Three wastes" income and tax reduction	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	sewage charges and fines	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 ,points, no description 0
	Forestation fees	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	Environmental protection investment	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1,point, no description 0
	depreciation and amortization cost of environmental protection facilities	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 points, no description 0
	Reduce pollution and improve the environment of research and development spending	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1point, no description 0

	Other environmental spending	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0
	Or have an environmental liabilities	0, 1, 2	qualitative and quantitative combined together 2 points, qualitative description 1 point, no description 0

In order to exclude the subjective factors of human, this paper grant *every message weight* as 1.The highest score for an enterprise can get is 26 points, The formula to calculate the environmental accounting information disclosure index is as follows:

$$EDI_i = \sum EDI_i \Big/ \sum MEDI_i$$

In the formula, ∑EDI means the sum of the entry scores the environmental disclosure of listed companies get; ∑MEDI means the sum of the entry scores the *best entry score the sum of the disclosure of information.*

4.2.2 Other variables

Other variables are designed as follows in table 3 . Based on the notice issued by the State Environmental Protection Administration in 2003 and the classification of the listed companies in Shandong province in table 1, this research regards the following industries as heavy pollution industries, exactly, they are mining, chemical raw materials and chemical products manufacturing, pharmaceutical manufacturing, plastic manufacturing, printing, rubber manufacturing, metal smelting and rolling processing industry, chemical fiber industry, paper and paper products industry, textile industry as a heavy pollution. According to the economy's development level in Shandong province, Qingdao, Jinan, Yantai, Weihai, Weifang, Zibo and Rizhao are regarded as economically developed areas, the other, economically underdeveloped areas.

***Table 3**:* Explanation of Other Variables

Variables signs	explanation
independent variable	
SIZE +	The natural logarithm of total assets of the company, on behalf of the company scale
ROE +	*return on net assets, as the measure of profitability*
RIND +	*independent directors proportion, independent directors to total number of members of the board*
Herfindahl -	*HeErFen DE index, the sum of the squares of the proportion of the top ten shareholders*
CEO -	*virtual variables, the company chairman and general manager separation is 0, or 1*
PLACE +	*Economically developed areas in + 1, otherwise 0*
IND +	*heavy pollution industry + 1, otherwise 0*
Control variables:	
LEV +	*asset-liability ratio and financial leverage on behalf of the company*
MINC +	*operating income growth rate as a measure of enterprise development ability*

5 the Empirical Results and Analysis

5.1 Descriptive Statistics

Statistical analysis results in table 4 by SAS software:

Table 4: Variable descriptive statistical results

Items	Year	Obser-vations	Minimum	Average	Maximum	Standard Deviation
EAID	2009 2010	63 63	0.0000 0.0000	0.6154 0.6154	0.2564 0.3263	0.1619 0.1854
Company Scale	2009 2010	63 63	20.3385 20.2709	24.0903 24.2135	21.8071 21.9664	0.9658 1.0057
Asset-liability ratio	2009 2010	63 63	0.0823 0.0715	0.8030 0.8549	0.4783 0.4962	0.1907 0.1966
Return of Owners' equity	2009 2010	63 63	-0.3197 -0.38627	0.2590 0.3145	0.0782 0.0811	0.0996 0.1197
Growth rate of sales	2009 2010	60 63	-0.5792 -0.4720	0.9789 1.3470	0.0208 0.3093	0.2746 0.3121
Stock Equity Concentration	2009 2010	63 63	0.0117 0.0111	0.5581 0.5574	0.1749 0.1735	0.1153 0.1236
independent directors proportion	2009 2010	63 63	0.2222 0.2667	0.5714 0.5556	0.3638 0.3637	0.0592 0.0507
Virtual Variable	**Year**	**Obser-vations**	**1mark frequency rate**		**0 mark frequency rate**	
Chairman,CEO separations	2009 2010	63 63	9 14.3% 8 12.7%		54 85.7% 55 87.3%	
Regional Differences	2009 2010	63 63	51 81% 51 81%		12 19% 12 19%	
Industry Differences	2009 2010	63 63	31 49.2% 31 49.2%		32 50.8% 32 50.8%	

The overall environmental accounting information disclosure level is not high enough though the index was 0.3263 in 2010 higher than that in 2009 from table 4. The maximum is 0.6154, the minimum is 0, and this means environmental accounting information disclosure level differences among enterprises. In 2010, Company Scale, asset-liability ratio, return on net assets, growth rate of sales increased in 2009, showing that the enterprise financial situation improved. Stock equity concentration decreased and the proportion of independent director remains constant, the chairman and general manager to one person proportion was 14.3% in 2009, fell to 12.7% in 2010.All these dates states better internal governance structure. From the perspective of the regional distribution of enterprises, enterprises in economically developed areas account for 81%; Heavy pollution industry enterprise number is 31, accounting for 49.2%.

5.2 Variable Correlation Analysis

The following (table 5) is the correlation analysis based on each index of the 2010 data.

***Table 5**:* Variable correlation statistics

	EDI	SIZE	ROE	RIND	HER	CEO	PLACE	IND	LEV	MINC
EDI	1									
SIZE	0.527** [1]	1								
ROE	-0.173	0.250*	1							
RIND	-0.118	-0.121	0.053	1						
HER	0.060	0.288* [2]	0.201	-0.137	1					
CEO	-0.058	-0.059	-0.115	0.087	-0.017	1				
PLACE	0.041	0.086	0.082	0.033	0.163	-0.301*	1			
IND	0.418**	0.129	-0.239	0.027	-0.125	-0.089	-0.089	1		
LEV	0.254*	0.348**	-0.225	0.091	0.010	-0.058	-0.073	0.081	1	
MINC	0.177	0.177*	0.372**	0.069	-0.024	0.041	0.181	-0.052	0.173	1

From table 5 the environmental accounting information disclosure index is significant positive correlation with company size, industry differences at 1%, and enterprise debt at the 5% significantly positive. Besides that, explanatory variables including debt level, company size shows the highest correlation 0.348. But Hossain (1995) study shows there are not serious impact on multiple regression analysis as long as coefficients between the explained variables lower than 0.8 or 0.9.

1 stands for the 1% level significantly

2 said stands for level significantly (two-tailed test)

5.3 Multivariate Regression Analysis

Multivariate regression model was built for further influence factors analysis of environmental accounting information disclosure level according to the preceding hypotheses:

Model 1:

$$EDI = b_0 + b_1 SIZE + b_2 ROE + b_3 RIND + b_4 HER + b_5 CEO + b_6 PLACE + b_7 IND + b_8 LEV + b_9 MINC + \eta$$

The Stepwise Regression method is used in this article to find influence factors of environmental accounting information disclosure of listed companies under certain significance level. Eventually regression model 2 is posed:

Model 2:

$$EDI = b_0 + b_1 SIZE + b_2 ROE + b_3 IND + \eta$$

Table 6:Regression coefficient estimates and significance test

Items	Regression coefficient	Significance level	The tolerance	Inflation factor
constant	-1.924	0.000		
Company Scale	0.101	0.000	0.900	1.111
Return on net-asset	-0.373	0.024	0.863	1.159
Industry differences	0.107	0.006	0.905	1.105

Note: the determination coefficient R2 = 0.453; the adjusted coefficient of determination R2 = 0.425;F = 16.286（significance level = 0.000)

We can see from table 6, the significance level is zero, F = 16. 286, therefore the regression equation on the significance level of 1% hypothesis passes the inspection; the coefficient of determination Adjusted is 0.425, which means the regression model of environmental accounting information disclosure index explanatory power of 42.5%. The variables in model 2 are of strong explanatory power to environmental accounting information disclosure level, but there are other affecting factors to explore; Tolerance of each variable is greater than 0.1,

the inflation factor is less than 10, illustrates very weak co linearity between the variables. The estimate of the regression coefficient is stable.

The company size, as well as industry difference variable coefficient is significant at the 1% level, and symbols is consistent with hypothesis , these verify the hypothesis 1 (the company size is positively related to environmental accounting information disclosure level)and hypothesis 7(the more serious pollution of the enterprise tends to disclose environment accounting information); return ratio on net assets variable coefficient is significant at the 5% level, contrary to hypothesis, explain corporate profitability is negatively related to the environmental accounting information disclosure level; Other factors to the enterprise environment accounting information disclosure is no significant influence.

6 Research Conclusion and Revelation

6.1 Research Conclusion

Based on the above analysis, the conclusions are:

(1) The level of environmental accounting information disclosure of listed companies has increased in recent years. Study shows that overall level of environmental accounting information disclosure is relatively low; disclosure level differences among enterprises are still big.

(2) The company scale is positive related to the level of environmental accounting information disclosure. The larger companies will take the initiative to disclose environmental accounting information in order to reduce agency cost, and obtain the support of the public.

(3) Enterprises polluting more seriously inclined to disclose environmental accounting information more. Polluting enterprises need cost more to dispose wastes and other environmental protection, which should report on their financial statements restricted by environmental regulations and generally accepted accounting principles.

(4) Corporate profitability is negatively related to the environmental accounting information disclosure level. Though signaling theory fails to explain this situation, one of the negative correlation reasons may be manger's reward determined by short term profit of enterprise. So mangers prefer to constantly improve the corporate profits and disclose good news in order to establish a good image, and attract more investment.

(5) Factors such as the equity concentration (EC), the proportion of independent directors (POI) and the chairman and general manage combination affect little on environmental accounting information disclosure level.

This condition may result from small sample number, or low effective surface perfect corporate governance structure .for example, independent directors did not perform proper supervision responsibility.

(6) Regional difference was not significant influence on environmental accounting information disclosure level. This suggests that environmental protection policy and regulation is almost the same affection on enterprise environmental information disclosure levels in developed regions and underdeveloped regions in Shandong province.

6.2 Revelation

According to this article conclusion, we need to do something from the following aspects to improve the level of enterprise environment accounting information disclosure.

(1) Enterprises should be encouraged to disclose more environmental accounting information. The governments and CSRC (China Securities Regulatory Commission) should establish rewards and punishment mechanism to improve enterprise environment accounting information disclosure level, guide enterprises greenly operating; (2) Enterprise managers' performance should be measured properly. Managers' compensation and rewards should be depended on enterprise long-term interests, especially environmental accounting information disclosure; (3) the effectiveness of internal control should be strengthened and corporate governance structure runs more efficiently; (4) the government and relevant departments should publish standards of environmental accounting information disclosure guidelines.

7 Drawbacks of the Research

Based on the empirical research, this paper analyses the factors that influence the level of the Enterprise Environment Accounting Information Disclosure. It surely has a certain practical significance, but there are still some deficiencies in the process of research: (1) This research only selects some listed companies in the fields of manufacturing and mining in east China's Shandong province as its research targets, so it is not clear whether it can reflect the overall situation of our country enterprise environment accounting information disclosure or not. (2) This research only collects information from annual reports and environmental reports, and not take the environmental accounting information in enterprises' prospectus, listed companies' announcement, mid-term reports into account. What's more, without considering the weight, this research simply puts environment accounting information entry together, so it may have certain negative influence on the conclusion of this paper. In the later research, samples should be collected in a wider range, enterprises' prospectus, listed companies' announcement, and other important reports should also be taken into account, and expert investigation method will be used to ensure that the conclusion is more accurate, more universal.

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Part 2 Environmental Management

F The analysis on the influence of water conservancy investment agricultural economic growth – An empirical study based on the boom period of Shandong Agriculture*

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Abstract

This paper uses econometric methods to carry out a Granger causality test on the construction of water conservancy infrastructure construction and agricultural economic growth in the boom period (1981-2002) of Shandong agriculture. Empirical results indicate that there exists two-way Granger causality between Shandong water conservancy infrastructure construction and Shandong agricultural economic growth. Therefore, water conservancy infrastructure construction has a significant influence on agricultural economic growth in Shandong.

Keywords: Water conservancy, Agricultural economic growth, Granger causality

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1 Introduction

Shandong Province is located in the lower reaches of the Yellow River. Its warm temperate monsoon climate zone features a windy spring, rainy summer, less rainy or snowy autumn and winter, and sudden shifts from warm to cool weather and heavy rains to drought. In the flood season, concentrated rainfall accounts for 70% to 80% of the province's total rainfall, with more than 50% of total rainfall falling in July and August. Flood control and disaster mitigation are always its water conservancy focus.

This paper examines the relationship of water conservancy and agriculture economic growth in the boom period from 1981 to 2002. Using an econometric method, we made a quantitative analysis of their mutual relationship. Although lagging in time, the research reflects history and summarizes past experience and natural laws in a meaningful way.

2 An empirical analysis on water conservancy and agriculture economic growth

2.1 Data sources

According to the studies' needs, the data were selected from the Shandong Rural Statistical Yearbook, 1981 to 2002.

***Table 1**:* The index of WCI and AEG from 1981 to 2002 of Shandong province

Year	Gross output value of agriculture (billion)	Water conservancy capital construction investment (billion)	Water conservancy capital construction investment of agricultural capital construction investment (%)
1981	198.5	0.55	66.7
1982	218.51	0.5	53.5
1983	259.5	0.4	53.7
1984	310.11	0.91	74
1985	335.42	0.79	62.8
1986	361.19	0.89	57.4
1987	413.18	0.58	37.9
1988	494.53	0.77	41.4
1989	547.66	3.88	89.9
1990	645.75	1.53	70.9
1991	779.18	2	67.5
1992	815.62	4.39	80.4
1993	944.99	4.45	71.3
1994	1282.25	8.08	78.7
1995	1678.16	10.1	70.1
1996	1962.12	13.75	78.3
1997	2058.32	19.58	75.2
1998	2174.54	15.14	73.9
1999	2202.95	20.43	71.7
2000	2294.35	31.05	80
2001	2453.96	29.91	77.9
2002	2526.05	30.38	77.4

Data Sources: *Shandong Rural Statistical Yearbook*
WCI=Water Conservancy Investment
AEG=Agriculture Economic Growth

Data included Shandong Water conservancy investment in capital construction (SI) and agriculture economic growth (AGDP). AGDP is the 'Gross output value of agriculture' which refers to the total production of agriculture, forestry, animal husbandry and fishery in monetary form. It reflects the overall scale and achievement in a certain period. Meanwhile, in order to eliminate heteroscedasticity in the time sequence and the over-fluctuation of the data, in Table 1, we transformed the natural logarithm among variables which are presented by LNAGDP and LNSI, respectively.

2.2 Model Establishment

The Granger causality test statistically tests the causal relationship between two variables. Its basic idea is that if X causes the change in Y, then the change in X should happen before the change of Y. If X changes lead to Y changes, then X helps predict Y. Restated, if, after adding the independent lag variable X to the lag variable Y regression, the independent variable X can significantly increase the capacity of the regression model to explain Y, then X is the Granger causality of Y. If lag variable X can't significantly increase the explaining capacity for the lag variable Y regression, then X is not the Granger causality of Y.

The premise of Granger causality test is the stationary time sequence or non-stationary time sequence relationship. By applying Eviews software, this paper tests the stationary time sequence of LNSI and LNAGDP, respectively. Testing results are showed in Table 2.

***Table 2**:* ADF unit root test

Sequence	Checking form	ADF statistics	Prob	Results
LNAGDP	(C,T, K)	-6.120070	0.0043	stationary *
LNSI	(C,T, K)	-6.120070	0.0009	stationary *

Note: checking form(C, T, K) refer to the Constant term, Trend term and Lag phase in unit root test equation.

* means significantly different at the level of 5%

The sequence of both LNSI and LNAGDP can reject the unit root null hypothesis at the 95% significant level which indicates that they are stationary. A further co-integration test also shows the co-integration relationship between LNSI and LNAGDP indicating that there is a long-term

stable relationship between water conservancy infrastructure construction investment, effective irrigation area, and the total production of agriculture, forestry, animal husbandry, and fishery. The Granger causality test used Eviews software and the test results are shown in Table 3.

***Table 3**:* Granger causality test

Null Hypothesis:	F-Statistic	Prob.	Results
LNSI does not Granger Cause LNAGDP	3.58010	0.0468	Reject the null hypothesis *
NAGDP does not Granger Cause LNSI	3.22509	0.0611	Reject the null hypothesis *

The testing results indicate that there is a two-way inner-relationship between LNSI and LNAGDP at the 90% significance level. There exists long- run growth effect between the growth of water conservancy infrastructure construction investment and agriculture economic growth which can propel the development of the agricultural economy forward. What's more, the increase of the agricultural economy has raised new requirements for water conservancy infrastructure and has provided fund sources to further promote water conservancy investment.

Based on the above results of the Granger causality test, a further analysis was made on the relation between water conservancy infrastructure construction and agricultural economic growth. A Log linear regression model (see 1) was constructed as follows:

$$\ln (AGDP) = \beta 0 + \beta 1 * \ln (SI) + \mu \quad (1)$$

In model (1) the explained variable AGDP represents the total production of agriculture, the explanatory variable SI represents water conservancy infrastructure construction investment, μ is random error, and β0 and β1 are estimated parameters. The elasticity coefficient, β1, reflects the influence of water conservancy investment on agricultural economic growth.

2.3 Parameter Estimation

The parameter was estimated by using Eviews software and ordinary least squares (results showed in Table 4) to obtain the regression equation (see 2).

$$LNAGDP = 0.551*LNSI + 6.001 \quad (2)$$

$$18.187^{***} \quad 100.170^{***}$$

R^2=0.942980, D.W=1.890187, F=330.7541

The use of *** means they passed the significant test at 1% level.

Regression equation (2) measured the impact of water conservancy infrastructure construction to the growth of Shandong agriculture economy. The overall significance of the equation and the R-squared are good, which indicates that water conservancy infrastructure construction has an overall explanative significance on the total production of agriculture.

Table 4: OLS Parameter Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNSI	0.551235	0.030310	18.18665	0.0000
C	6.001484	0.059913	100.1703	0.0000
R-squared	0.942980	Mean dependent var		6.702203
Adjusted R-squared	0.940129	S.D. dependent var		0.879495
S.E. of regression	0.215200	Akaike info criterion		-0.147993
Sum squared resid	0.926218	Schwarz criterion		-0.048807
Log likelihood	3.627923	Hannan-Quinn criter.		-0.124628
F-statistic	330.7541	Durbin-Watson stat		1.890187
Prob(F-statistic)	0.000000			

The constant term and the regression coefficient of SI have respectively passed the significance test at the 1% level which indicates that the influence of the two water conservancy infrastructure construction indexes on Shandong agriculture economic growth is very significant. Moreover, according to the regression

coefficient, we found that a 1% increase in water conservancy infrastructure construction investment was associated with a 0.55% increase in the total production of agriculture. Results suggest that increasing water infrastructure construction has significant economic benefits to the sustainable and stable growth of Shandong's agricultural economy.

2.4 Model Verification

(1) Economic significance evaluation. According to the regression equation (2), there is a positively correlated relationship between water conservancy infrastructure construction investment and agricultural economic growth. A 1% increase in water conservancy infrastructure construction investment was associated with a 0.55% increase in the total production of agriculture, forestry, animal husbandry and fishery.

(2) Statistical evaluation. Goodness of fit check: R^2 =0.943, the overall significance of equation and the goodness of fit are excellent. T-test: the t-test value of LNSI is 18.187, the probability is near 0, it has passed the t-test and the significance is high. F-test: the f-test value is 330.75, the probability is near 0, it has passed the f-test and the significance is high.

2.5 Model Analysis

Based on *Shandong Rural Statistical Yearbook,* this study selected data from 1981 to 2002 to analyze the influence of Shandong water conservancy infrastructure investment on the total production of agriculture, forestry, animal husbandry and fishery. In order to eliminate heteroscedasticity existing in the time sequence and data over-fluctuation, the variables were transformed using natural logarithms which are presented by LNAGDP and LNSI respectively. Afterwards, an ADF stationary test was conducted to ensure the stationarity of the time sequence which satisfied the premise of the Granger causality test. The Granger causality test indicates that there is a two-way inner-relationship between LNSI and LNAGDP at the 90% significant level. To ensure that there exists a long-run growth effect between the growth of water conservancy infrastructure construction investment and agriculture economic growth, the role of water conservancy infrastructure construction investment on agriculture economic growth was analyzed. A ordinary least squares regression model was used to estimate parameters as follows:

LNAGDP = 0.551*LNSI + 6.001.

3 Policy recommendations

3.1 Coordinating departments to build strong leadership mechanism

Water and finance departments at all levels should establish a platform to construct small-scale irrigation and water conservancy systems, set up leadership groups, strengthen coordination and cooperation between departments, clarify the functions and division of work, fulfill duties and responsibilities, and use regulations and mechanisms to guarantee small-scale irrigation systems in rural areas. Under leadership groups, we should establish province-wide construction planning for small-scale irrigation and water conservancy systems and guide the relevant departments to realize jointly connected, input matching, project co-constructing and resources sharing. We should try to enrich regulatory power and strengthen internal supervision. We should try to give full play to discipline inspection, attorney, auditing, and intermediary organization to make joint efforts in inspection and management. Thus, we should provide strong organization to guarantee funds for 'supporting agriculture and benefiting farmers'. We should prepare for capital integration to ensure that rural water conservancy construction funds can be employed with optimum efficiency.

3.2 Promulgate Rural Water Conservancy Development Fund Law as soon as possible

Two features characterize the presently published policies that concern the construction of irrigation and water conservancy projects. One is that most of the policies are not in the form of law. Thus, some beneficial policies have not been well implemented because there is no clear plan or government commitment. The other is that the policies do not fully reflect the general welfare policy of granting 'the same national treatment' or 'the same peasants' treatment'. Such defects lead to unfairness where some villages and peasants receive policy support but others do not--even if the latter does all the same things. To make up for these deficiencies, we should provide legislative and financial guarantees. It is essential to promulgate *Rural Water Conservancy Development Fund Law* and to fund the special provisions of that law.

3.3 Set up diversified financing mechanism, innovate investment model

We recommend continuously improving the water conservancy investment system based on public input to achieve a long-term, steadily rising mechanism. During times when government at all levels enjoys increasing fiscal revenues, we encourage government policies that facilitate prosperity at all levels and in all sectors of society. To make the fullest use of market mechanisms, we recommend speeding up irrigation and water conservancy construction by auctioning managerial rights to increase the scale of water conservancy investments and to enhance their efficiency. We also recommend continuing to implement the policy of 'substituting subsidies with rewards'. For example, if key projects at a township level can pass the acceptance tests organized by the water conservancy, finance, and audit departments, then they should receive appropriate rewards in proportion to their government investment.

3.4 Supervisory and evaluation mechanisms to promote rational use of water conservancy public finances

While promoting water conservancy reform, attention should also be paid to 'rent-seeking', 'broken window economics', and 'for uncultivated land' auction contracts that occur in the water rights transfer process. Water resources have a public finance feature which sometimes enables rent-seeking behavior by vested interests (including local government, interest groups. enterprises, individuals, etc.). The government should watch the 'window' and select the 'craftsman' carefully. Comprehensive and multi-level supervisory mechanisms for the small-scale irrigation and water conservancy construction should be established. Emphasis should be on the transformation from post-supervision to whole-process supervision. Law should make fund supervision run through the process of approval summation, fund allocation, implementation, and performance evaluation. The surveillance function including inspection, supervision, auditing and discipline departments should be unfettered. Social forces should participate in regulation and engage in supervision to ensure safe compliance and effective utilization of irrigation and water conservancy construction funds.

3.5 Improve the utilization efficiency of water conservancy public funding

Management is the theme of economic activity. We recommend to change the phenomenon of “value construction, ignore management”, to avoid the formalism of only competing for projects and investment but ignoring management and profit afterwards. We recommend serious considerations on water conservancy project fixed assets as the economic fundamentals to manage. We recommend constructing dynamic water tariffs and billing structures to ensure normal operation and sustained development of water conservancy project. We also recommend establishing benign management mechanism of the basic industry which regards economic benefits as its center and fixed assets management as its tool.

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Part 2 Environmental Management

G Research on the transformation of Shandong agricultural economy from virtual water view

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Abstract

Based on the index of irrigation quota and ‘virtual water’, This paper divided agricultural product into four categories, as follows, low water consumption high benefit products, high water consumption high benefit products, low water consumption low benefit products, and high water consumption low benefit products. Combining the reality of Shandong water shortage, specific ideas are: taking precedence develop low water consumption high benefit products, properly Developing low water consumption low benefit products, be guarded in development of high water consumption high benefit products, controlling develop high water consumption low benefit products, so as to optimize the structure of agricultural production, improving agricultural water use efficiency, realize economic transformation in the development of agriculture in Shandong province.

Keywords

virtual water, agricultural production structure, transformation of agricultural economy

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1 Introduction

Shandong province is not only a big agricultural province, it is a typical shortage of water resources, and more than 65% of the total is agriculture (irrigation) water in the urban and rural water. Based on the special background of water scarcity and large agricultural water consumption, it has an important academic value and practical significance to research the transformation of Shandong agricultural economy with a worldwide popular new theory of "virtual water".

2 Agricultural products (crops) classification

2.1 Agricultural irrigation quota and Agricultural products (crops) classification

In order to make the agricultural irrigation has an scientific and reasonable water standard, to protect and save water, improve water efficiency in agriculture, on the basis of the comprehensive analysis of various cities statistical data , the Water Resources Department of Shandong Province combined with decades of irrigation test results from Shandong water resource institute, to complete " Shandong province agricultural irrigation water quota" which classify by crop, area, type of irrigation, irrigation method, and probability of irrigation. Crops were divided in different varieties as below, wheat, corn, rice, cotton, vegetables, grape, apple, pear, etc. Areas were divided in five parts , they are Plain area of southwest, Plain area of north Shandong, Hilly area of middle Shandong, Mountain area of south Shandong, and Hilly and Mountain area of east Shandong. Type of irrigation was divided in well-irrigated area, reservoir, irrigation channel (lake, spring) area, and the Yellow River irrigation area. Irrigation method was divided in surface irrigation and water-saving irrigation (sprinkling irrigation and micro- irrigation) two parts. Probability of irrigation was 50% and 75%. the agricultural irrigation water standard in Shandong province was determined by " Shandong province agricultural irrigation water quota", it provided a scientific basis for implementing agricultural water management system which combined with the total water control and quota management, as well as provided the technical reference standard for the unified planning, rational allocation of provincial and regional water resources. Surface irrigation water quota of main agricultural products in Shandong province is shown in Table 1.

***Table 1**:* Surface irrigation water quota of main agricultural products in Shandong province (50% probability of irrigation)

Crop's varieties	Net irrigation water quota（units :m^3/mu）				
	Plain area of southwest	Plain area of north Shandong	Hilly area of middle Shandong	Mountain area of south Shandong	Hilly and Mountain area of east Shandong
Wheat	125	135	120	115	122
Corn	66	70	62	60	65
Rice	—	—	410	430	—
Cotton	115	120	—	—	—
Vegetables	245	252	235	220	240
Grape	140	145	130	125	135
Apple	115	120	105	100	110
Pear	110	115	100	95	105
other	105	110	100	98	108

Sources: website of Shandong Water Resources, http://www.sdwr.gov.cn/.

Refer to the data from "Shandong province agricultural irrigation water quota", to classify crop irrigation water quota as a differential with 100 units, main agricultural products in Shandong province can be classified as follows: the high water consumption crops are rice and vegetables; the low water consumption agricultural products are Wheat, fruit (apple, pear, and grapes), corn and cotton. Specific classification is shown in Table 2.

***Table 2**:* Classification of surface irrigation quota about main agricultural products in Shandong province

Classification		**Surface irrigation quota**	**Crop's varieties**
high water consumption crops	Highest water consumption	>300	rice
	Higher water consumption	200-300	vegetables
low water consumption crops	Lower water consumption	100-200	Wheat, fruit (apple, pear, and grapes)
	Lowest water consumption	<100	corn and cotton

Sources: website of Shandong Water Resources, http://www.sdwr.gov.cn/.

2.2 'Virtual water' volume and agricultural products classification

Virtual water refers to the sum of the water use for producing a good or service, also means the water that hidden in a product. The volume of virtual water in the primary product of single crop can be according to the following formula:

SWD = CWR / CY

In this formula, SWD is virtual water volume in the primary agricultural products（m^3/t）, CWR is actual water consumption of agricultural products（m^3/hm^2）, CY is the production of primary agricultural products（t/hm^2）

Virtual water volume of primary product divided by rate of primary product is Virtual water volume of final product.

According to the above formula, using CROPWAT software and EXCEL software, combined with the cultivation of crops characteristic in Shandong province, the virtual water formula of the main agricultural products in Shandong province are shown in Table 3.

***Table 3**:* Virtual water formula of the main agricultural products in Shandong province

Agricultural products	CWR	CY	SWD	V	VWL
Winter wheat	521.9	5492	0.950	0.7	1.357
corn	387.0	6353	0.609	0.5	1.218
rice	753.0	7997	0.942	0.5	1.883
soybean	408.3	2727	1.497	1.0	1.497
peanut	551.4	4068	1.355	1.0	1.355
cotton	834.7	1000	8.347	0.5	16.694
potato (sweet potato)	539.2	7062	0.764	1.0	0.764
vegetables	410.2	46582	0.088	1.0	0.088
Melons (fruit with melon)	482.5	45924	0.150	1.0	0.150

The index of code in the table means: V－rate of primary product, CWR - water consumption of agricultural products（m^3/hm^2）, CY - production of agricultural products（kg /hm^2）, SWD - virtual water volume of primary agricultural products（m^3/ kg）, VWL－Virtual water volume of final product（m^3/kg, formula: VWL = SWD / V）. Data resources: website of Shandong Agricultural information, http://www.sdny.gov.cn/.

The volume of "virtual water" between different agricultural products cannot be compared from the physical computing view, for example, the "virtual water" volume of 1 kg of cotton is 16.694 m^3, while 1 kg of vegetables "virtual water" volume is 0.088 m^3, simple comparison of these two Numbers have no practical significance. So, In order to solve the problem of numeric comparison, we will make appropriate transformation for "virtual water", to introduce the concept of "unit water profit", its specific meaning is the economic benefits generated by unit virtual water, computation formula is as follows:

UWP = P/ VWL

In last formula, UWP means unit water profit of agricultural products, P means price of unit agricultural products, VWL means virtual water volume of unit agricultural products.

According to the data of agricultural products market price in Shandong province in 2005, unit water profit of main agricultural products can be calculated (see Table 4).

Table 4: *U*nit water profit of agricultural products in Shandong province

Agricultural products	**Price(yuan/t)**	**Virtual water volume of final product(m^3/t)**	**Unit water profit（yuan/m^3）**
Winter wheat	1425.6	1357	1.051
corn	1141.2	1218	0.937
rice	1566.4	1883	0.832
soybean	3575	1497	2.388
peanut	5600	1355	4.133
cotton	10200	16694	0.611
potato (sweet potato)	1350	764	1.767
vegetables	2380	88	27.045
Melons (fruit with melon)	1370	150	9.133

Sources: the price of agricultural products from website of Shandong Agricultural information, http://www.sdny.gov.cn/

On the basis of measuring the agricultural products' unit water profit, roughly classify them as a appropriate differential, main agricultural products in Shandong province can be classified as follows: vegetables, peanut and Melons (fruit with melon) are high unit water benefit agricultural products, of which vegetables is extra-high. Winter wheat, soybean, potato (sweet potato), corn, rice and cotton are low unit water benefit agricultural products (crops), of which corn, rice and cotton are extra-low. Specific classification is shown in table 5.

Table 5: Classification of unit water profit about main agricultural products in Shandong province

Classification		**Unit water profit**	**Agricultural products**
high unit water benefit agricultural products	extra-high	>27	vegetables
	higher	4.0-10.0	Peanut, Melons (fruit with melon)
low unit water benefit agricultural products	lower	1.0-3.0	Winter wheat, soybean, potato(sweet potato)
	extra-low	<1.0	corn, rice , cotton

Sources: website of Shandong Agricultural information, http://www.sdny.gov.cn/

2.3 Comprehensive classifications of main agricultural products in Shandong province

Main agricultural products in Shandong province can be classified by comprehensive utilization two indexes of irrigation quota and agricultural unit water profit, such as table 6.

Table 6: Comprehensive classification of main agricultural products in Shandong province

Classification	**Agricultural products**
high water consumption high benefit products	vegetables
high water consumption low benefit products	rice
low water consumption low benefit products	corn, wheat , cotton
low water consumption high benefit products	peanut ,fruit (Melons), soybean, potato(sweet potato)

Sources: Refer to Table 2 and Table 5 information, hereinto, peanut, soybean, and potato (sweet potato) in Shandong province is generally not irrigation, so irrigation quota has no data, which can be regarded as zero.#

3 Situation and evaluation of agricultural production structure changes in Shandong province

3.1 Situation of main agricultural production structure changes in Shandong province

The type of main agricultural products could be combined and analyzed according to the mentioned comprehensive classification, then its planting area and the proportion has taken on a more clear change trend (see Table 7).

Table 7: Proportion of planting area about main agricultural products in Shandong province (units: %)

Years	Low water consumption's proportion									High water consumption's proportion		
	wheat	corn	cotton	Soybean	potato	peanut	melons	fruit	Total	rice	Vegetables	Total
1991	37.5	21.5	13.9	3.6	6.1	6.2	0.5	5.4	95.2	1.3	3.5	4.8
1992	37.0	21.0	13.3	3.7	6.0	6.1	0.7	6.8	95.0	1.0	4.0	5.0
1993	37.7	22.1	6.8	5.4	5.9	6.9	0.9	7.1	93.4	0.9	5.7	6.6
1994	35.8	21.7	7.0	5.0	5.4	7.6	1.3	7.5	91.7	1.0	7.3	8.3
1995	35.3	23.7	5.8	4.5	5.2	7.4	1.0	8.2	91.7	1.0	7.5	8.5
1996	34.9	24.5	4.1	4.0	5.1	6.7	1.4	8.3	89.2	1.3	9.4	10.8
1997	35.2	22.9	3.4	4.6	4.7	6.8	1.7	7.7	87.6	1.4	11.0	12.4
1998	34.2	23.8	3.5	4.5	4.4	7.1	2.1	7.0	87.3	1.3	11.4	12.7
1999	34.2	23.6	3.1	4.2	4.2	7.3	2.0	6.7	85.8	1.6	12.6	14.2
2000	33.1	21.9	4.5	3.8	3.6	7.7	2.2	6.4	83.7	1.4	14.9	16.3
2001	30.4	21.4	6.3	3.3	3.7	8.3	2.6	6.3	82.8	1.4	15.8	17.2
2002	29.6	22.0	5.7	2.8	3.5	8.3	2.7	6.5	81.6	1.3	17.1	18.4
2003	27.4	21.2	7.7	2.5	3.5	8.7	2.9	7.0	81.3	0.9	17.8	18.7
2004	27.5	21.8	9.4	2.1	2.8	8.2	2.6	6.7	81.4	1.1	17.5	18.6
2005	29.0	24.1	7.4	2.1	2.5	7.8	2.5	6.8	82.7	1.0	16.3	17.3
2006	31.1	25.1	7.8	1.6	2.5	6.9	2.3	6.1	84.1	1.1	14.8	15.9
2007	31.3	25.4	8.0	1.5	2.0	7.0	2.3	6.1	83.7	1.1	15.2	16.3

2008	31.4	25.6	7.9	1.4	3.0	7.1	2.3	5.3	83.5	1.1	15.4	16.5
2009	31.6	26.0	7.1	1.4	2.1	6.9	2.4	5.2	83.1	1.2	15.7	16.9
2010	31.6	26.2	6.8	1.4	2.1	7.1	2.5	5.1	80.2	1.1	18.7	19.8
2011	31.7	26.4	6.6	1.3	2.1	7.0	2.4	5.2	83.1	1.1	15.8	16.9

Sources: Shandong Statistics Yearbook, China Agriculture Statistics Yearbook. Proportion is computed by 10 kinds of agricultural products totaling planting area of 100 in the table.

3.2 Evaluations of main agricultural production structure changes in Shandong province

From the perspective of virtual water, the rate of high water consumption agricultural products in crops plantings is high in nearly 15 years, after jumped by more than 15% since 2000, this rate never fall down. While the area of low water consumption dropped below 85%. The trend of "high water consumption" is obvious in agricultural production, it would run counter to the situation of water scarcity in Shandong province and the goals that strengthen the agricultural water demand management, control and reduce agricultural water demand. In a sense, the agriculture of Shandong province has the earnings growth in recent years, at the cost of increasing water consumption. For a big agricultural province that water resource is very scarce, the agricultural development way needs transformation.

4 The optimization direction and strategy of agricultural production structure

4.1 taking precedence develop low water consumption high benefit products

The agricultural products of low water consumption high benefit products are peanut, soybean, potato (sweet potato), Melons (fruit with melon), and fruit.

Three crops (peanut, soybean, potato (sweet potato)) have a strong competition in land in Shandong province, and the land types are very similar, so that to increase the three crops planting area is impossible at the same time, which should have a choice. Taking into consideration of market environment and production environment in Shandong about these three kinds of crops, the development of peanut production is important to keep in mind. And here are reasons: soybean does not have a competitive advantage in the market under the double squeeze between northeast China and foreign imports. Although the production of potato (sweet potato) is no obvious foreign competition, the intensity of labor is big, so the large-scale cultivation has not the labor support. By contrast, peanut production not only conforms to the Shandong farmers grow habits, but also has competitiveness at home and abroad market, should be considered to develop.

According to market demand both at home and abroad, Shandong peanut production should consider mainly adjusting and optimizing the structure of peanut varieties, to be developed for a special use (oil and food). In the oil use aspect, needs of the oil enterprise should be highlighted, and pay attention to improve the nutritional quality and flavor, especially strong flavor peanut oil production. Eating peanuts should focus on the growing and production variety with a big ratio of O/L (oleic acid/linoleic acid) and low fat, for adapt to the needs from the consumer food consumption at home and abroad. Look from the proportion relation, the proportion of oil and eating can be arranged at about 6:4.

Looked from the development of fruit industry in Shandong province, have the following characteristics, operator is numerous, small scale and low degree of product differentiation, loose vertical integration, and particularly fierce internal competition, these characteristics are the important factors affecting the development of Shandong’s fruit industry. Therefore, the further development of fruit production should strive to solve the above problems: (1) to propel the

scale operation of fruit production .Small-scale production cannot take full advantage of economies of scale, which impact the fruit bargaining position and bargaining power in the market, and is unfavorable to improve the fruit quality and the production of high-grade fruit, therefore, efforts should be made to promote the scale operation of fruit production. (2) To improve quality, create differences and protect characteristics and brand. Shandong's fruit production should be centered on improving quantity and quality, to concentrate on fruit quality and safety. In accordance with the security requirements of fruit edible, standardization production should be carried out, fruit production environment need to be strictly controlled, the pesticides are rationally used, scientific fertilization, and the contaminants and pesticide residues must be controlled. At the same time, do well division and planning, highlight the local advantages and local characteristic and pay attention to the registration and protection of characteristics and brand, to create the famous brand of Shandong fruit. (3)To improve longitudinal connection relationship of fruit industrial chain, establish good relations of contract in each link, such as production, supply, sales and processing, strengthen contract management, improve contract quality, and increase the execution rate. (4) Improve internal competition relations of the fruit industry, and create effective competition structure of fruit market. This realization of effective competition structure, in addition to the government's effective management and control, cannot leave with industry association's internal coordination. Consequently, a fruit industry association should be encouraged to form.

Melon fruit production should highlight its features and brand, to concentrate on developing these high-grade melon fruit, for example, Dezhou watermelon, ChangLe watermelon, Qingzhou galaxy honeydew melon (melon), etc. Melon fruit production should be increased the degree of commercialization, industrialization and organization by effort, and improved market competitiveness, at the same time should pay attention to protect the brand, and maintain the characteristics.

4.2 properly Develop low water consumption low benefit products

Low water consumption low benefit products are mainly refers to wheat, corn, and cotton. Three agricultural overall development strategies should be: stabilize and ensure area, develop for the special use, improve the comparative benefits as much as possible.

As one of major winter wheat-producing region in China, the planting area and yield of wheat in Shandong province is very important to ensure domestic food security, so wheat production should be sure to ensure area and yield. of course, to expand production is lack of economic incentives, which is influenced by the low comparative advantage(it has been calculated that wheat production per hectare of pure income less than 10% of the fruit and vegetable production, only 1/3 of the peanut production). Nevertheless, the lowest 3 million hectares planting area also should be given security (under this area, the wheat output is about 15 billion kg, per capita is 180 kg, twice as much the per consumption). In addition, in order to improve the comparative benefits of wheat production should be scientifically adjust the variety structure of wheat production, reduce the traditional planting area and the yield, proper increase the planting area and output wheat for high quality and special wheat variety.

The corn production of Shandong province is mainly summer corn, corn-wheat crop rotation; its planting area has strong correlation with wheat planting area, which is about the wheat planting area of 65% - 75%. The main purpose of corn in Shandong province is processing feed (about 70%) and for industrial raw materials (about 20%), therefore, corn production must pay attention to adapt to the market demand. The choice of varieties should be developed further for the special purpose, such as development of forage maize, high starch corn, high oil corn, etc. Edible part can be developed for high protein corn, sweet corn, waxy corn, popcorn, etc., then planting area and quantity of common corn is properly reduced. The main factors of influencing the corn planting area in Shandong is also comparative returns is relatively low, for this reason, the corn production should focus on reducing production cost an improving the quality. On the one hand, In corn production cost reduction, scientific fertilization, scientific (water-saving) irrigation and pesticide applying should be paid attention to reduce invested cost; on the other hand, in corn quality improvement, crop production should hard to reduce drug residue and focus on the direction of "green “and "pollution-free", which be sure to provide clean raw materials for feedstuff industry and processing industry.

The cotton production in Shandong province had been created the historical high point around 1990 , but later had a relatively large shrinking which affected by cotton quality and cost, then picked up for over two years. Cause of cotton quality problems are various, such as varieties, planting technology, picking, transportation, and processing. We need to improve the quality of cotton from many aspects, as follows. (1) Popularize fine varieties, do well high quality planning, make a clear definition of the main variety in each region, solve the problems of cotton varieties, as excessive, chaos, miscellaneous, and guarantee the consistency of raw cotton production in the area. (2) Optimize suitable cultivation techniques, vigorously promote the nutrition—bowl seedling transplanting rice seedlings, plastic film mulching and technology of plant diseases and insect pests biocontrol, carry out the modeling cultivation and standardized management, improve the quality of cotton fiber. (3) Strictly check on the links of cotton harvest, transportation and transformation, respectively execute picking, drying, storage and sale, promote cotton goods packaging, solve the problem of mixed with different fibers. Relatively high Cotton costs is another obvious disadvantage in Shandong province, as a result, efforts should be made to reduce the cost of cotton. In production, the balanced fertilization, water-saving irrigation and the technology of pesticide applying should be promoted to reduce the material cost of cotton production; the three-dimensional planting technology should be promoted to decrease the sharing costs of cotton production; and the cotton marketing should be improved actively to reduce the circulation cost.

4.3 Discreetly develop high water consumption high benefit products

High water consumption high benefit products is mainly vegetables. Vegetables production is a high earning agricultural project in Shandong province, over the years, one target of the agricultural structure adjustment is vegetables growing. Therefore, vegetables planting area, vegetables production and the amounts of vegetables ranks first in the whole country, more than 50% of the vegetables are sold throughout the country. To compress the planting area and reduce the production is impractical on account of higher comparative returns, but the water consumption of vegetable planting is lager(based on the test data of Shandong vegetable irrigation, produce 1 kg garden truck need to consume 200 kg water, water productivity is 0.025 kg per cubic meters of water). So that, in vegetables production space, should be based on the actual situation of water resources. According to research, because of excessive exploitation of

groundwater resources, some old vegetables producing regions (such as Shouguang) have formed a large area of groundwater funnel region. As these places, can be gradually evolved to a vegetable distribution center, and transferring producing areas to areas with abundant surface water resources.

4.4 Controlling develop high water consumption low benefit products

High water consumption low benefit products is mainly rice, its production is mainly concentrated in the southwest lake district, the Yellow River delta (parts counties of Binzhou and Dongying) and southern basin (Llinyi). In these areas, rice is very popular with Shandong consumers, on account of relatively abundant water resources condition and good rice quality. So it plays an important role in improving the food structure of urban and rural residents in Shandong province. However, rice planting must to consume large amounts of water resources, in the face of increasingly water shortages situation and increasing agricultural water opportunity cost, the rice production should be strictly controlled in a handful of county (township) that have abundant water resources, and sown area only reduce can't increase. From the perspective of adjusting grain ration structure, rice planting can be controlled with a total area of 1 million mu.

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Part 3 Human Resource Management

H Expectations of elderly employees – configuration of incentive systems

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Abstract

Elderly employees are often perceived as people with a limited learning ability and innovative ability. Even if their physical fitness is not on the highest level any more, their experience, knowledge and many social skills ensure, that elderly employees are able to perform.

This articel deals with the assumption, that elderly employees should be retained in the workforce, in particular in times of a dramatical demographic change. Therefore, specified incentive systems have to be created. We assume, that not all incentives will match the expectations of elderly employees. Hence, companies have to choose the right incentives individually. Because normative expectations are the reason for motivation or demotivation and commitment or stagnation, they are of particular importance.

Keywords

Elderly Employees, Incentive Systems, Normative Expectations, Demographic Change, Retention Management of Elderly Employees

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1 Introduction

During the last 25 years early retirements were often used. Young and well educated employees were a abundant resource in the most western labor markets, even in Germany. But times are changing – we are facing a radical demographic change. The number of young school leavers is decreasing, periods for academic education last longer as twenty years ago, and brain drain to more attractive countries and regions is running. The workforce in most post-industrial countries is shrinking–and will shrink in the next three decades more and faster.

Elderly employees are having their comeback! The drafted demographic change is a challenge for companies in two perspectives: elderly employees possess useful experience and rare implicit knowledge, and they are much more physical capable than their preceding generation. Employees in the age of 50 and more are motivated and able to defend their job positions based on know-how in using their networks and corporate institutions as work councils.

This article deals with demographic change and the effects on the labor market. The evaluation of the demographic change and the ensuing consequences provide the basis for the future labor force potential, especially of elderly employees (chapter two). Regarding the fact that the age pattern is going to change, elderly employees become the focus of attention. For that reason, chapter three deals with the definition of elderly employees and answers the question if elderly employees still have gainful competences. If they do have, in what way are their competencies relevant for a further occupation? Afterwards, the attention is directed to retention management. Retention management is necessary in order to retain elderly employees. Nevertheless, to retain elderly employee is not simple. It is essential to know their priorities and expectations because it is unrewarding to distribute incentives in a non-selective way. Accordingly, the beginning of chapter four deals with the classification of elderly employees regarding their stage of life. Different incentives follow and at the end of chapter four, the effect of the above mentioned incentives will be illustrated. Do these incentives have a positive effect on elderly employees?

We focus on the situation in Germany with its specific mixture of different sized enterprises. SMEs are in the majority–but their chances to get highly educated young employees are much lower compared to big companies. In this article we just give an overview about the main factors and aspects in a short run. For more details please find sources in footnotes.

2 Patterns and Effects of Demographic Change in Germany

2.1 Basic Factors

Fertility rate describes the amount of live birth a woman gives throughout her live. Between 1970 and 2013 the fertility rate decreased in Germany by 32 percent from 2.03 up to 1.38.[2] European industrial countries display an average fertility rate of 1.5. That is almost 30 percent lower than the number which is needed to uphold the population number. Reasons for this will be explained in the following keywords:

1. The image of women minding children all day and attending housewife duties is bygone outmoded.
2. The labor market situation changed during the last years concerning shrinking security of employment. In order to remain a potential employee, women want to retain their work experience.
3. The educational level increased during the last decades. The effect is that women put more emphasis on their professional life.[3] Having children often involves opportunity costs for the professional life along.[4]
4. Preventive measures such as the birth control pill were permitted and available, so that the fertility has been shrinking since the establishment.

The mortality rate is another reason for the demographic change. Life expectations increased extraordinary during the last decades, which entail in a lower mortality rate. Life expectations increased as a result of improved living conditions. Health consciousness is rising. Consequently, diseases are better to overcome. Further components of improved living conditions are better medical treatment and reduced manual work. In addition, infant mortality rate decreased and the average life expectancy increased.[5]

The balance of migration is made out of the difference of emigration and immigration. Next to political reasons for leaving ones country, there are various other reasons, such as the economic and social situation. One reason for the current negative net migration is due to the implementation of the German tax

2 Cf. https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Geburten/Geburten.html, accessed on 24-03-2014.

3 Cf. Rump, J. (2009), P. 21 ff.

4 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 23.

5 Cf. Prezewowsky, M. (2007), P. 24.

identification number. It is predicted to turn the net migration again. Recently, caused by economically weakness in Bulgaria and Romania, the number of immigrants arriving Germany is rising as a temporary phenomenon on approx. 400.000 people in 2013.[6]

In summary in Germany we can consider a shrinking workforce, simultaneous an ageing population with many physical fit “Best/Golden Agers”.

2.2 Ramifications for Labor Market

The number of unemployed people will not entirely vanish because of the regression of available workforce attributable to the demographic change. Instead, it will lead to a shortage of skilled labor.[7] Therefore, the need of highly qualified workforce is high.[8] The demand for skilled workers boosts, because their work is not substitutable through technology. Hence, the practical knowledge of elderly employees is valuable for the companies. A company without this practical knowledge has a critical competitive disadvantage, because it is missing an important resource.[9]

Germany, as a poor country in natural resources considers know-how as an important resource. 80 percent of productivity gain in Germany derives from know-how. The working environment has changed to the effect that more expert knowledge is required in order to suit the needs. Moreover, tasks are getting more pretentious and therefore, higher qualifications are required. The share of simple work, as for example sales display, is on the decline. Work with a middle level of work like case worker undergoes a slight demand, whereas high qualified work, such as scientific research, experiences high interest.[10]

In the last 10 years, the number of German people in the employable age rose on the slightest pace compared to all other countries. This results in a war of talents, which is hard to imagine considering the current number of unemployed. However, the majority of the unemployed are low qualified potential employees. The know-how of the population increases at a tearing

6 Cf. https://www.destatis.de/DE/PresseService/Presse/Pressemitteilungen/2013/11/PD13_391_12711.html, accessed on 24-03-2014.

7 Cf. Kocka, J.; Staudinger, U. M. (2009), P. 75.

8 Cf. Rump, J. (2009), P. 35.

9 Cf. Prezewowsky, M. (2007), P. 36.

10 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 49.

pace. Approximately every 40 years, the know-how doubles, in some technology areas even every six months. Therefore, the numbers of highly qualified jobs go up whereas simple tasks are less required. This will result in more expensive specialists and executive staff which will be hard to keep on a permanent basis. In 2012 the number of the employable population amounted to 45.33 million.[11]

Depending on the migration balance, the number of employable people will be reduced by 5 – 18 million in 2050.[12] In addition, the age pattern changes as well. The German population will be cut down to 69-75 million in 2050, which is a cutback of twelve or seven million people. The number of people at the age of 65 years and older will increase by 12.5 percent.[13] The average age of the labor force potential will increase. With rising age the number of working population is shrinking, particularly from the age of 60. Whereas 82 percent of men and 64.4 percent of women are still working at the age between 55 and 60, only 40.6 percent of men and 22.9 percent of women still work at the age between 60 and 65. This makes vaguely one third less working women and vaguely one half less working men.

Elderly employees are appreciated as an important resource because they represent a high share of the employees. Accordingly, it is necessary to invest in them, because it is insufficient to just rely on the potential of young employees.[14] Companies have to focus on elderly employees in order to face the demographic challenge.

11 Cf. http://de.statista.com/statistik/daten/studie/198797/umfrage/erwerbspersonenpotenzial-in-deutschland/, accessed on 05-04-2014.

12 Cf. Walla, W.; Eggen, B.; Lipinski, H. (2006), P. 182.

13 Cf. Frerichs, F. (2009), S. 232.

14 Cf. Tippelt, R. et al. (2009), P. 16.

3 Elderly Employees as Competence Leaders and Key Personell

A general definition of elderly employees does not exist. Consequently, generations are not comparable and no definition of elderly employees would be steady.[15] Furthermore, each person ages at a different pace and from a different point of time. The aging process is affected by the individual character and the social environment.

Nevertheless, different definitions can be found in literature. The Organization for Economic Co-operation and Development (OECD), Directorate for Employment, Labour and Social Affairs (DELSA), defines elderly employees as people who are in their second half of their professional life, but have not yet reached the retirement age. Beyond that, they are healthy and employable. Furthermore, OECD differs between ageing employees, at the age between 44 and 55, and older employees, in the age of 55 up to retirement.[16]

The federal labor office has two rudiments to classify elderly employees. On the one hand, a person belongs to the elderly employees by the age of 44 and older. On the other hand, if a person is unable to get along on the job market without help of others, the person is considered as an elderly employee too.[17]

Enterprise size effects the categorization of elderly employees. In this way, employees working in a big company are sooner ranked among elderly employees than employees working in a small company.[18]

3.1 Classification of Age

Different viewpoints can be found for the purpose of defining the term “age”. There are for example the perceived age and calendric age. The calendric age is based on the years of one’s life which is calculated from the date of birth. The perceived age is individually and subjective.[19] On the basis of the calendric age it is not possible to classify the age objectively, since the social aspects

15 Cf. Langhoff, Th. (2009), P. 17.

16 Cf. http://oecdeducationtoday.blogspot.de/2012/07/older-wiser-better-ageing-workforce-and.html, accessed on 05-04-2014; DELSA Newsletter Issue 2 (2006), P. 2.

17 Cf. Bundesministerium für Arbeit und Soziales (2013).

18 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 64.

19 Cf. Prezewowsky, M. (2007), P. 68.

influence the ageing process immensely.[20] Hence, the age is characterized by lifestyle and activities. The career has a big impact on the aging process as well. So, a wholesome level of challenge and stress and positive acknowledgement will have a positive effect. Work may have a stabilizing and supporting impact on the healthiness.[21]

The calendric age cannot be equated with the perceived age, because one may feel non-corresponding to one's age. The older the person is, the bigger the difference between calendric and perceived age. According to this, German people in the 30-somethings feel three years younger, people in the 40-somethings feel up to five and half years younger and people in the 50-somethings feel even more than 6 years younger.[22]

The kind of profession affects the ageing process as well. People with high physical and mental requirements are earlier categorized as elderly employees as people with lower requirements.[23] The branch also plays a role.[24] Age depends on the level of professionalism. A 80 years old conductor of a philharmonic orchestra is easier to imagine than road builder in the age of 70.

3.2 Learning Ability and Competencies of Elderly Employees

The learning ability has only a slight correlation with the calendric age. For a long time, the *deficit-model* was etched in many minds. The deficit-model says that intelligence is declining with increasing age.[25]

The compensation model came to the fore. The compensation model declares that deficits in some areas are compensated through progression in other areas. With growing age deficits come up in the pace an employee comes to terms with work stages, whereas reasoning is heightened and life experience benefits. Targeted measures slow the process of deficits down.[26]

20 Cf. ibid.

21 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 53.

22 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 73.

23 Cf. Bundesministerium für Arbeit und Soziales (2013), P. 23.

24 Probably IT-experts for social media design are much younger than the CEO of an insurance company.

25 Cf. Kocka, J.; Staudinger, U. M. (2009), P. 76.

26 Cf. ibid.

The learning ability changes in the course of time–that is not to say that it is getting worse. The eyesight and the short-term memory are not on the level as in one´s youth, therefore verbal skills, improvisation skills and creativity are well-marked. A change in the way of learning does not mean that their willingness to learn is lower. [27] Elderly employees are as capable of learning as young employees. The only distinction lies in the different way of learning and their diverse competences.[28]

The preconception of losing capability with increasing age is outdated. Capability is divided into physical and psychological capability. The physical capability wanes over time. From the 50th year of age, physical capability lowers by 30 percent. How rapid and intensive the physical capability lowers differs individually. Through preventive actions this development can be decelerated. Although the psychological capability is characterized by decrease with advancing age, the calendric age only plays a minor part.[29] Instead, a healthy and conscious attitude to life is important.[30]

Amongst others, expert knowledge, reliability and conscientiousness steepen.[31] Elderly employees have particularly in social issues advantages in comparison to young employees. Through long lasting experiences elderly employees have social connections and expert knowledge. Long lasting experience helps to arrange more efficient working steps, also. Through their reasonability they make thoughtful decisions. Work experience enables a prospective way of thinking. Complex situations are evaluated realistically.[32] Furthermore, their relationships are usually not subjected to severe conflicts anymore. Therefore, elderly employees are well-adjusted.

They know their metes and bounds and do not tend to overestimate. In this way they are able to take over responsibility.[33] They possess know-how which is crucial for the company. The working atmosphere with elderly employees is more balanced because their knowledge of human nature contributes to a fair

27 Cf. Schöpf, N.; Geldermann, B. (2007), P. 47.
28 Cf. Flato, E.; Reinold-Scheible, S. (2008). P. 137.
29 Cf. Flato, E.; Reinold-Scheible, S. (2008). P. 137.
30 Cf. ibid, P. 136.
31 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 81.
32 Cf. ibid, P. 85.
33 Cf. Flato, E.; Reinold-Scheible, S. (2008). P. 139.

way of behaving.[34] In stressful times their social skills conduce to an appeasing atmosphere. The ease of mind helps to respond to a critical conjunction towards the superior. Furthermore, elderly employees possess a positive attitude to work and this transmits to the other employees.[35] Elderly employees are in contact with many people who are important for the business.[36]

The aforementioned competencies, such as long-lasting experience and social skills of elderly employees are not quantifiable and substitutable one-to-one. Thereby, it is the practical knowledge which is so important for the companies.

We can sum up, that elderly employees have a unique pattern of skill disposition. Their strength embrace:[37]

- practical knowledge,
- working moral,
- quality consciousness,
- loyalty, and
- psychological capacity.

3.3 Expectations of Elderly Employees

The worthiness of elderly employees is increasing and with that their expectations.[38] Because they know about the demographic change and skills shortage and as well as they are well connected in their companies, it is easy for them to develop a set of expectations. Above all, they know how to enforce their intentions by labour dispute and strike.[39] We assume a unique set of expectations characterizing elderly employees.

With relation to elderly employees and their remaining time in their companies expectations are dividable into anticipative and normative expectations:[40]

34 Cf. Koch, G. (1990), P. 16 f.

35 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 85.

36 Cf. Koch, G. (1990), P. 18 f.

37 Cf. Brandenburg, U.; Domschke, J.-P. (2007), P. 75.

38 Cf. Prezewowsky, M. (2007), P. 36.

39 The average age of labour union members in Germany is rising up to 42.5 years in 2006. Hence, labour union members are averaged older than all employees (average 40 years). Cf. Biebeler, H.; Lesch, H. (2006), P. 7.

40 Cf. Müller, A. (2013).

1. Anticipative expectations express assumptions and depend heavily on the reality and experience. In the case of not happening, expectations are rectified or not considered anymore. When shaping new expectations past disappointments are taken into account. In this way anticipative expectations can be adaptively. Therefore they are able to stay up-to-date. All in all anticipative expectations show how something is going to be.

2. Whereas normative expectations express how something should be. They may differ from the reality and even in the case of not happening normative expectations are maintained. Caused by the strong interdependence of normative expectations and norms/values of a person, such kind of assumptions of future occurrences, conditions, and situations are rather powerful in motivating people. Now they are transferred to elderly employees:[41]

Anticipative expectations ask for working hours suitable to the private life of elderly employees. A balance between work and life has to be created. Work content matches their performance and the working place is adjusted as well, for example through ergonomics regulations. In order to make use of the knowledge of elderly employees, the transfer of knowledge between all generations is ensured. Normative expectations put emphasize on maintenance of their social rank. With increasing age the hierarchical position in the company is usually high. Such a position involves for example an appropriate salary and responsible tasks. Elderly employees expect to maintain their status as a sign of appreciation of their longstanding engagement. This can be reached by considering the mentioned aspects of a social rank in the company. These expectations have to be considered in order to keep the right incentives available. The psychological contract exists in addition to the legal contract. It compromise implicit expectations and obligations of employer and employee. At an older age, a change in values happens which has to be considered. The need for self-development and flexible way of life is demanded. An adequate payment is important in order to maintain the standard of living and status.

All in all, anticipative and normative expectations fall into line with the expectations of the psychological contract. In the case of an unbalanced equilibration of the psychological contract employees undergo a loss in motivation. That is prevented by retention management.

41 Cf. Müller, A. (2013), P. 469.

4 Retention Management and Incentive Systems for Elderly Employees

In the past years, practices as for example premature pension were used in order to discharge elderly employees at an early stage. Now it is time to rethink and to develop measures for the purpose of long-term relationships with elderly employees. For an effective personnel commitment different tools are necessary. These tools consist of monetary and non-monetary incentives. In order to gain a good effect, these tools are mixed. In the best case they complement each other in a positive way.[42]

A heavily personnel commitment is required in times of modification, as for example the demographic change and their ramifications. Personnel commitment is constituted of a relationship between employees and the company. This relationship includes two perspectives: the perspective of the employee and the perspective of the company. In the literature, the perspective of the company predominates. Therefore, the term “retention” is used. The perspective of the company deals with the question how a company will be able to commit employees to the company in order to retain their competencies. The perspective of the employee deals with the question what prompts an employee to stay.[43]

Every employee has individual needs and, therefore, can be motivated in a different way. In order to offer incentives for the purpose of a long period of employment, incentive systems are needed. These are divided into tangible and intangible incentives. In the next subchapters, theories of motivation and incentives which are divided into these two mentioned groups and their benefits will be shown.

4.1 Maslow’s Hierarchy of Needs

It is important to find out the right measures in order to defer to the employees properly. One way to identify the right measures is to use the well known Maslow`s hierarchy of needs. It is based on 5 steps, starting with the basic needs and finishing with the need for self-fulfillment on the peak (it is redundant to introduce the basics of that model). How can we use it for the explanation of expectation of elderly employees?

42 Cf. Stührenberg, L. (2004), P. 46 f.

43 Cf. Vom Hofe, A. (2004), P. 4 ff.

In the case of elderly employees it is to assume that, over the course of their professional life they are able to satisfy their needs. They are positioned at the peak (self-fulfillment). That implies that they aspire after work which they can arrange by themselves and which challenges them. This can be achieved through job enrichment and further trainings, for example.

The second highest step in Maslow's hierarchy of needs deals with the individual needs. The employee has to have the opportunity to give proof of his work and use it the best way. Besides, the work has to be appreciated and in the decision-making process the employee has to be incorporated. The highest step, need for self-fulfillment, is characterized by an area of free-dom. This freedom is necessary in order to work independently and creative. Mistakes have to be seen as learning experience and can therefore encourage the advancement of the employee.

Maslow's hierarchy of needs functions as a guidance by finding the right incentives. That is because different needs require different incentives.

4.2 Intrinsic and Extrinsic Motivation

Motivation is the reason for activities. The intensiveness of these activities depends on the motivation. It can be divided into intrinsic and extrinsic motivation. The intrinsic motivation arises out of the work itself. In other words, enjoying work and identifying with it increases performance. It describes the more challenging a task is, the higher is the intrinsic motivation. Extrinsic motivation in comparison results from the outcomes of the work. In this sense, work is only a means to an end.[44]

In everyday work there are three main motives for extrinsic and intrinsic motivation. Extrinsic motives are shaped by the appetence of money, security and prestige. Money is an important factor especially for younger employees and a tangential role for elderly employees. If the salary is deemed to be adequate, it is no longer a performance-enhancing tool as it used to be. Security of employment ensures satisfaction of needs and is, therefore, important. To gain prestige it is important to satisfy expectations of the working environment. Intrinsic motives are shaped by performance, know-how and sociability. An employee oriented by performance aspires after overcoming a challenging task. Solving this task illustrates a satisfaction. Therefore, know-

44 Cf. Maus, H. A. (2009), P. 122; Nicolai, Chr. (2006), P. 114 f.

how is essential. Through know-how the desire of being expert can be satisfied. Professional development is also important in order to support the independent and responsible way of working. Last but not least, sociability is an intrinsic motive as well. The wish belonging to a work group is marked varyingly strong, though.[45]

In order to motivate elderly employees it is important to pay extra attention to the intrinsic motivation. This can be explained by the aforementioned extrinsic motives constitute belong, compared to Maslow's hierarchy of need to the lower steps, also called the deficit needs. On the contrary, intrinsic motivation emphasizes elderly employee's strengths, as for example a reliable procedure.

4.3 Incentive Systems

Incentives prompt employees to increase their willingness to perform. In order to provide the right incentive for different needs, a differentiated incentive system is needed. In the first place, tangible and intangible incentives can be distinguished. More precise segmentation ensues in the following subchapters. Nevertheless, a sharp distinction between tangible and intangible incentives is not always possible because some incentives have both characteristics. A promotion can be mentioned as an example. Acceptance of more responsibility is an intangible incentive, an increased pay grades is involved as the tangible incentive, however. The balance of all incentives is a big challenge because of the individual needs. Figure 1 shows the incentive systems which are now subsequently expounded.[46]

45 Cf. Nicolai, Chr. (2009), P. 114 ff.

46 Cf. Holtbrügge, D. (2010), P 193.

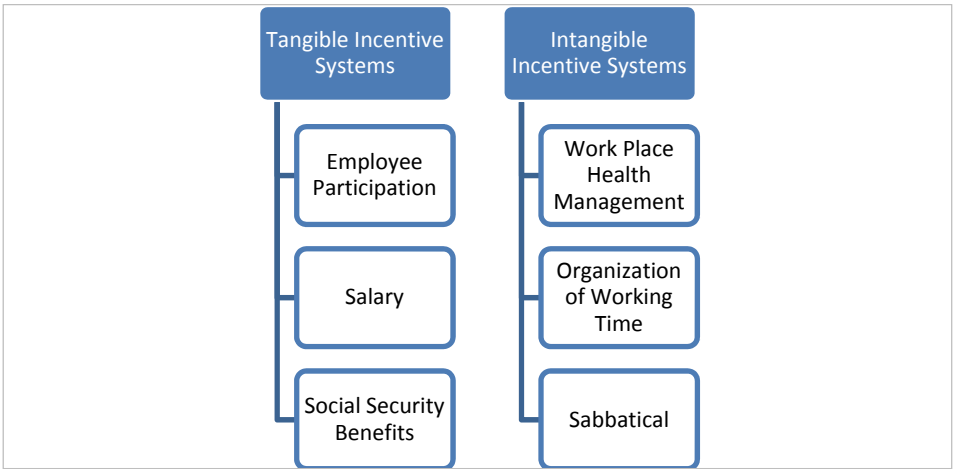

***Figure 1**:* Selected Incentive Systems for Elderly Employees

Source: According to Nicolai, Chr. (2009), P. 127 ff.

4.3.1 Salary

Salary consists of fixed and variable components. The fixed salary is equitable with a basic salary. With increasing hierarchical level the amount of fixed salary is decreasing and variable salary is increasing.[47] Fulfilling agreed targets and individual performance together amount to variable salary. This is measured upon the success of an enterprise or division.

It is also possible to use a part of the variable salary as "deferred compensation". That implies that the money is credited instead of disbursed. While paying off, usually while retired, taxes have to be paid. That involves a tax advantage because tax burden is usually lower while retirement than while working period. In addition it is a good possibility for the pension plan.[48]

4.3.2 Employee Participation

Equity participations serve to increase the employees' attachment to the company. Employees' motivation is deep entrenched because company's success is directly noticeable. Two kinds of equity participation exist: participation in equity capital and participation in debts.

47 Cf. Holtbrügge, D. (2010), P 194.
48 Cf. Nicolai, Chr. (2009), P. 151 f.

Participation in equity capital in joint-stock companies is succeeded by employees' share. The employee has the possibility to purchase at a price which is lower than the current stock market price. Therefore they show a higher chance of profit in the case of selling after the blocking period, compared to shares bought on the capital market. Participation in equity capital in companies with other legal structures is possible in terms of silent partnership. Silent partnerships are characterized by profit sharing with simultaneously eschewal of the right of co-determination.

Participation in debts is possible in the way of an employee loan and a bond of debt registered to employees. Does an employee accommodate the company with money, it is a case of participation in debts. The credit is limited in time and compensated with a rate of interest which is higher than the market interest rate. A bond of debt has a similarity to the employee loan, because the employee makes a credit available and receives a payment of interests as well. However, the loan is a collateralized debt obligation. On these grounds, the employee has the choice between a convertible bond and participation bond. The convertible bond presupposes a joint-stock company, because the employee has only the possibility to convert it into shares. Therewith it is a possibility to merge from participation in debts into participation in equity. The interest payment of a participation bond is oriented towards the company profit. In the worst case the employee do not get the interest payment.[49]

4.3.3 Social Security Benefit

Social securities are subdivided into legal social securities, tariff social securities and voluntary social securities. Legal social securities have to be accomplished because of legal reasons. Pension-, health-, nursing care-, unemployment- and accident insurance rank among legal social security. Furthermore, payments for rest allowances because of bank holidays or maternity protection also belong to legal social security. That ensures a minimum standard for employees which can be expanded by tariff- and voluntary social securities.

Tariff social securities arise from a collective labor agreement between labor union and employer's association. Among others, the main components that are being discussed are additional payment and reduction of working hours. Tariff

49 Cf. Holtbrügge, D. (2010), P 193 ff.

and legal social securities are predetermined. Therefore the operational social policy is restricted by the voluntary social securities. Voluntary social securities can be imparted in different ways, from cash benefit through provision for the future to health care and others. In this way it is not always possible to distinguish tangible from intangible incentives. For elderly employees provision is for their old age and preventive examinations and training opportunities are important to them. In this way efficiency and commitment can be increased.[50]

4.3.4 Work Place Health Management

Not only for LOHAS[51] work place health management is an important component of live which should be integrated in the everyday work in order to have a motivating effect.

Healthiness is a basis for employability. In order to keep it up as long as possible, all three components of healthiness have to be in good order. Healthiness consists of physical, psychological and social well-being.[52]

Psychological well-being can be achieved through live-long learning by further trainings. Physical and social well-being gained by company-facilitated sport activities in the form of operational gyms or membership in a fitness company. That has two positive effects. Firstly, physical fitness raises and secondly social contacts among colleagues increase as well. Balanced nutrition contributes to healthy eating and a material well-being.[53]

Workplace design should be guided by the needs of elderly employees. Ergonomic workplace design reduces the occupational burden and has a preventive character regarding postural abnormality. This is directly connected with the organization of work place (another possible item of intangible incentives in figure 1).

50 Cf. ibid.

51 Lifestyle Of Health And Sustainability.

52 Cf. Flato, E.; Reinold-Scheible, S. (2008). P. 151.

53 Cf. ibid., P. 157 f.

4.3.5 Organization of Working Time

The working time (related with the concept of work-life-balance) has to be arranged so that the overall performance is still expected to be good.[54] In doing so, different possibilities to organize the working time are available.

Flexible working hours allow a good compatibility of family and work. With flexible working hours the everyday working day is shapeable individually. Increase or decrease of the working hours agreed by contract will be noticed. The difference between regular working hours and actual working time has to be balanced within a timeframe which is arranged in advance. Such a timeframe can be for example a month or even the professional life. An increase of working hours can be balanced through for example vacation days or overtime compensation. This can be customized according to the individual living conditions. If an employee wants to reduce their working hours permanently but does not want to finish the professional life completely, part-time working is another possibility. On the one hand, the employee is able to put emphasis on private and occupational interests. On the other hand, the employee has to accept that salary decreases with less working hours.[55]

Job-Sharing is a specific form of part time working. It implies that several employees share one working place. It can be divided into temporal and functional job-sharing. Temporal job-sharing means that several employees fill one position. In this way they are able to subdivide the work among themselves. Functional job-sharing implies that the employees do different work. It is particularly suitable if elderly employees work together with younger employees. Elderly employees are able to share their strengths, as for example their practical knowledge, which younger employees are missing. In this way, job-sharing constitutes on the one hand a way to adapt the working hours and on the other hand to underline particular strengths.[56]

Furthermore, lifetime accounts exist in order to flexibilize the working hours at the end of the professional life. Lifetime account saves overtime hours which do not have to be balanced. In this way employees save time credits which are compensated, comparable with saving money on a bankbook. If the employee wants to reduce the working hours salary loss is not automatically involved.

54 Cf. Holtbrügge, D. (2010), P 167.
55 Cf. Holtbrügge, D. (2010), P 172 f.
56 Cf ibid., P 174.

Elderly employees are therefore able to shape their working hours in a way it suits them without putting up with salary loss. It is also possible to get the savings of the lifetime account while being retired. In this way, it is also a way of old-age provision. In nowadays pension system has a motivational effect.[57]

4.3.6 Sabbatical

Sabbatical is another way to organize working time. It is orientated towards the working lifetime. During a fixed timeframe the employee works fulltime but relinquish only a partition of the salary. This partition is kept by the company until the sabbatical takes effect. During the sabbatical the employee draws the saved salary and is exempted from work for a period of time. The length of the sabbatical differs from a few weeks up to one year. It is oriented towards the individual needs. In this way, employees are able to fulfill their individual wishes without relinquishing their professional development. It is especially interesting because the same position or at least an equivalent position is reserved for the time of the sabbatical. A sabbatical ensures to assemble one's forces. Therefore it increases the motivation to work again in the long-run.[58]

The attraction of Sabbaticals is backed by a legal regulation. This regulation says that already rendered but not compensated working hours or relinquished salary can be registered in a particular account and is shielded in case of insolvency. The content of this account can be used only for specific purposes, as for example the reduction of the working time for a certain time or further trainings. The everyday working time cannot be influenced. Therefore, this legal regulation has a long-term purpose.[59]

4.4 Critical Summary

In order to motivate employees, especially elderly employees, companies have to consider if each incentive signifies the right thing. Monetary incentives meet rather basic needs and the need for security. They enable employees to sensible their achievements on a financial basis. In order to uphold their standard of living it has a motivational effect on elderly employees.

57 Cf. Nicolai, Chr. (2009), P. 173.
58 Cf. Holtbrügge, D. (2010), P 174.
59 Cf. ibid.

Nevertheless, monetary incentives do not serve a long-lasting motivational effect, because the amount of wage would have needed would rise constantly. Even if it would be possible to increase the salary constantly in order to gain a motivational effect. It would not work, because elderly employees put more emphasis on compatibility of work and life. They appreciate their free time more than money at a certain amount. Therefore intangible incentives are necessary.[60]

For many people work does not only serve the purpose to be well-funded. It has rather a social character because it conveys the feeling to be needed. This has a motivational and health enhancing effect.[61]

Flexibilization of working place contains restricted advantages for elderly employees. Desk-sharing benefits communication and cooperation between work colleagues because employees are sitting and working more often together with colleagues than usually. However, the individuality is vanishing since the working place has no individual character anymore. In addition, an office constitutes a status symbol which is achieved after a long successful working life.

Hence, the flexibilization of the working place is a possibility to react to the needs of elderly employees. However, it is only with some reservations beneficial. Organization of working time, in particular working time on trust has a motivational effect. Thus, elderly employees are able to work without time pressure. Nobody looks over their shoulder and makes them feel strained.

Sabbatical is a possibility to organize the working time appropriate private requirements for a long predefined time. Elderly employees are in this way able to realize their individual plans. Both, private and occupational matters can be realized without quitting the job. Long journeys, care of relatives or period of reflection are possibilities for a sabbatical because of private reasons and a professional retraining may be displayed as an occupational matter. Elderly employees are in a stage of life in which they are financially backed up and their kids are usually grown up. Therefore they wish to realize their desires. By realizing a sabbatical a win-win situation comes up. Employees are able to realize their private wishes and return motivated because their needs are

60 Cf. Holz, M. (2007), P. 161 f.

61 Cf. Flato, E.; Reinold-Scheible, S. (2008). P. 152.

considered and taken seriously. Companies maintain employees with crucial practical knowledge and who are willing and able to perform. Work-life balance is also a way to bring private and occupational challenges into line. In the context of the demographic change and elderly employees is the advantage of commitment of peculiar interest. Work-life balance induce loyalty, high engagement, attachment to the company and a low sick level. A low sick level is reached because elderly employees are able to arrange their work in a way they want to. That is why they are not under pressure of work and overburdened. Usually elderly employees work already quite a long time for the same company. If they sense that they are appreciated and the company defers to their needs, loyalty, engagement, the employee's attachment to the company will increase, hence.[62]

Healthiness is prerequisite in order to be employable. In order to maintain a healthy constitution, preventive measures are necessary. However, the statutory health insurance does not bear the full costs. Therefore is a work place health management an incentive because it meets the needs of elderly employees, too. Last but not least career possibilities represent an incentive as well. By providing an opportunity to attend advanced vocational training employees know that they have future prospects. Furthermore, continuous intellectual stimulus has a health-enhancing effect. The example of the company Robert Bosch GmbH shows that career does not have to end with retirement. Robert Bosch GmbH takes advantage of the life experience of elderly employees and hence their practical knowledge. Employees working for that company know that their knowledge is appreciated and that they will have the possibility to carry on with their work, even when retired. For many people, work displays a purpose in life. This can be continued in an extent it suits them best. Therefore do career possibilities display an incentive to elderly employees.

Summarizing it can be said that these incentives have a positive effect with regards to their advantages and disadvantages as abovementioned. But an universally valid solution cannot be derived. Scientific research for all incentives is missing and incentives have to be chosen regarding individual business possibilities.

62 Cf. Langhoff, Th. (2009), P. 288.

5 Conclusion

Germany is a country with many successful companies which are based on a high technical innovative standard. In order to remain competitive, companies need the expertise knowledge of their employees. However, the demographic change issues a challenge to the companies to maintain their knowledge in the form of human resources.

Demographic change is composed of the fertility rate, mortality and migration. The decreased number of births and increased life expectancy lead to an ageing population in the first place and later to a shrinking population. Through migration, this development can be retarded but not stopped completely. The consequences for the labor market and qualification structure are evident: Jobs with low qualification requirements are outsourced and a high demand for employees with a high qualification occurs. In this way, companies have to focus on elderly employees because they possess crucial practical knowledge.

Employees in the age of 50 and older ranked among the group of elderly employees. But it is to be noted that age is always relative because everybody is characterized by different experience which shape the individual condition. Furthermore, the competencies were listed and it was found out that elderly employees possess characteristics which companies consider as crucial.

It is possible to ensure staff retention. Thereby, Maslow's hierarchy of needs was used to find out the right measures. According to that, it was pointed out that elderly employees are positioned at the peak of the hierarchy of needs. Next, it was referred to the origins of motivation. When a company has found out if they are intrinsic or extrinsic motivated, appropriate incentives can be adjusted towards them. In the case of elderly employees, it was found that especially the intrinsic motivation plays an important role.

Incentive systems were divided into tangible and intangible incentives. The incentives are only able to have an effect if they are perceptibly in the everyday working life. The critical summary of all incentives concluded with answer to the question, if the incentives have a positive effect on elderly employees. It was found that selected incentives effect the commitment of elderly employees in a positive way. However, an universally valid answer cannot be given because the incentives have to be chosen according to needs and possibilities of the company and employee individually.

As it was expounded, the demographic change is going to extent even worse. Companies will not have alternatives than to focus on elderly employees since the demographic change will also take place in other European countries. In the course of the shrinking number of the labor force potential, elderly employees will become key players. They benefit from their crucial knowledge because they know that their current market value is high. Prospectively it is even going to increase and at the same time are their expectations are increasing as well.

In order to be prepared and to resist the consequences of the demographic change, the requirements have to be created nowadays. „The problem won't just be a lack of bodies. Skills, knowledge, experience, and relationships walk out the door every time somebody retires- and they take time and money to replace."[63]

63 Dychtwald, K.; Erickson, T. J.; Morison. B. (2008), P. 158.

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Part 3 Human Resource Management

I Career paths of Chinese FOM graduates

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Abstract

This paper conducts an analysis of the Chinese FOM master and bachelor students‘ career paths and development. It outlines the historical development of Chinese overseas students in Germany and then examines Chinese partner universities’ and German FOM-data of Chinese FOM graduates. The results of this analysis call for a more comprehensive survey that is both culturally adjusted and assesses the situation of students with a certain profile over a longer period of time. In this way potential for further improvement in the study-curricula for this specific group of students can be discerned.

Keywords

career paths of graduates, Chinese alumni, cooperative educational projects

Table of Content

List of Abbreviations

CNNIC	China Internet Network Information Center
CPE	Cooperation Project in Education
CV	Curriculum Vitae
DAAD	Deutscher Akademischer Austauschdienst
EU	European Union
FH	Fachhochschule
FOM	Hochschule für Oekonomie & Management
GSSBT	German-Sino School of Business & Technology
HIS	Hochschulinformationssystem
INCHER	International Center for Higher Education Research
KOAB	Kooperationsprojekt Absolventenstudien
MA	Master of Arts
M&A	Mergers & Acquisitions
MC	Multiple choice
SDAU	Shandong Agricultural University
SME	Small and Medium Sized Enterprise
SUFE	Shanxi University of Finance & Economics
US	United States
WTO	World Trade Organization
WW II	World War II

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1 Introduction

1.1 Chinese students abroad in history and today

With ever increasing mobility in the 21st century studying abroad has become an endeavour that excites students all around the globe. It is this very fascination both with cultural foreignness and advanced knowledge that motivates young people to leave their home countries in search for knowledge, professional experience and personal growth. In the case of China, being a country with strong social hierarchies, student mobility to the West has been almost a *national mission* at least since the end of the Qing dynasty. Spurred by a situation of semi-colonization and technical backwardness since the mid-nineteenth century China sought to regain its formerly strong, independent political and economic place in the world. Therefore towards the end of the 19th century both government officials and students were sent to mostly Japan and Germany, countries that were admired by China for the economic success of the 1868 Meiji-reform and the political and military strength of the highly disciplined Prussian *Kaiserreich*.[2] Of these two countries Germany has welcomed Chinese students since the latter decades of the 19th century until today in mainly four large waves:

These four waves can be characterized by different motifs. The first and second wave focused on Germany's legal and political system as Chinese students were sent to study law and state economy/political sciences particularly in Germany's capital Berlin. [3] Needless to say this was an attempt to understand Germany's political system and the econonomic *success factors* behind Germany's constitutional monarchy and the Weimar Republic respectively.

2 Cf. Yao, L. (2004), pp. 1ff.

3 Cf. Du, W. (2012), pp. 12f.

***Table 1**:* Chinese students in Germany since 1871

Year	1871 – 1919	1920 – 1933	1979 – 2000	2001 – 2014
Low	?	72 (1920)	?	19.374 (2003)
High	?	312 (1924)	?	23.883 (2012)
Average	1876: 7 people sent by government	287 (1920- 1927)	1981: 856 students (10% of all Chinese oversea students)	?

Source: author's own based on data from DAAD; HIS (2013), p. 16; Du, W. (2012), p. 4.; Yao, L. (2004), p. 2; p. 12.

After having had no diplomatic exchange for more than thirty years after WW II and during the Cold War the third wave of Chinese students who came to Germany again were state-selected elite students. Their mission, however, was a different one as they were meant to help materialize the Chinese politics of Reform and Opening (改革开放政策) that clearly aimed at the economic growth of the country. Therefore the Chinese students who came to Germany in the 1980s and 1990s mainly studied the German language, economics, engineering and natural sciences. [4]

Since joining the WTO in 2001 and due to more buying power among Chinese citizens the number of Chinese students who study in Germany has risen today to formerly unknown numbers. Also their circle has expanded in range from exclusively government selected students and elite family children to also *nouveau riche*-family's and middle-class offspring. Along with this development the study focus lies with economics and engineering subjects as many students are keen to work in well-established companies or to found their own business. [5]

In 2012 among foreign students in Germany "one in ten first-year students comes from China" [6], thus with a total number of 23.883 students forming the largest group of foreign students in Germany. [7] Yet not only the number of students who now annually do come to Germany for studies has significantly increased, but also the subjects of study have seen a shift in focus and the

4 Cf. Yao, L. (2004), pp. 7 – 10.
5 Cf. European Commission; Ministry of Education in China (2011), pp. 2ff.
6 DAAD; HIS (2013), p. 29.
7 Cf. ibid., p. 16.

number of cooperative educational projects among China and Germany has largely grown during the last decade. In 2006 there already existed 79 cooperative projects in education (CPEs) between China and Europe. 47 of these projects were between the EU and China and 19 between Germany and China, Germany being the country in Europe that by far entertains most bi-national CPEs with China among the EU-member states (the next largest number of projects being only 6 in the UK). [8]

1.2 Aims and structure of this paper

Since Germany is *the* country in the EU that entertains most binational CPEs with China surprisingly little is known on how these educational projects influence the career of Chinese graduates. Therefore it is the foremost aim of this paper to develop ideas for a questionnaire-draft that can be employed in a quantitative analysis that seeks to investigate career paths of Chinese FOM graduates and may be applicable to Chinese graduates who hold German academic degrees in general. These ideas shall be based on current scientific alumni questionnaire formats such as the ones used for INCHER research. At the same time, however, the focus of the ideas will be on how the questionnaire needs to be modified so that cultural differences between German and Chinese graduates are taken into consideration. The next important question that differs from German alumni questionnaires is on the relevance of the country and business cultural contexts' influence on the FOM alumni's career choice and path. It is of large interest to find out whether this group of graduates rather wants to work in a Chinese or German company, a large cooperation or rather in an SME, in China or in Germany or another country and what the motivation for the individual choice is. Also specific questions need to be modelled in order to find out what from the alumni's point of view the success factors of their career are. This, finally, leads to the question on how these former FOM-students' study-program has contributed to the development of their knowledge, skills and competencies that were necessary for their career. In this way an alumni survey among them can bring about insights on how the FOM-study programs' curriculi and study-accompanying student services can be further improved so that the Chinese students' needs as future players on the German-Chinese and overall international job market can be met – an aim that all Chinese students who come to Germany wish for.

8 Cf. Pinna, C. (2009), pp. 517f.

According to the above questions the paper is structured as follows: In this chapter the current and historical situation of Chinese students in Germany is outlined, followed by the argument that the quality of their study programs needs to be analyzed and constantly monitored in regard to this student group's future employability. Herein, the research aim to develop ideas for an according alumni questionnaire that shall come to exemplary use for the group of the FOM-alumni is outlined. In chapter two the current programs for Chinese students at the FOM-German-Sino School of Business and Technology and the existing alumni work are introduced. Based on this and the FOM's Chinese partner universities' information, the data on Chinese FOM-GSSBT bachelor graduates are anlayzed and the results of a 2014 qualitative alumni survey among Chinese FOM-GSSBT master graduates are assessed and possible typical career paths that have so far been observed among these former students are characterized. In the following chapter the German INCHER alumni survey project KOAB is critically analyzed in the light of necessary modifications towards the end of questioning the specific group of Chinese alumni. Finally with a focus on current Chinese culture and the cultural shift between generations in China ideas for culturally necessary questionnaire modifications are presented.

In the conclusion the results of the paper will be summarized and a further research project to conduct a comprehensive large-scale survey in an intercultural adequate format among the more than 2000 Chinese FOM-GSSBT graduates is encouraged.

1.3 Methodology

Through inductive reasoning based on the Chinese partner universities' data on Chinese double degree bachelor graduates and the FOM survey-generated data on Chinese FOM master graduates typical career paths and their commonness among Chinese FOM graduates are outlined. These career paths are then connected to certain skills such as language proficiency, intercultural compentencies and specialized knowledge in order to establish hypotheses in regard to which skills are inevitable in order to succeed in a certain career path.

The primary data that are used to this end consist of two sets of data on bachelor graduates and one set on master graduates. The bachelor graduate data were generated upon exmatriculation of students from the Chinese partner universities in the time period of July 2006 through July 2013 (SUFE) and 20

June 2008 through 24 April 2013 (SDAU). In total 1244 sets of data (SUFE) and 372 sets of data respectively (SDAU) were analyzed. A total number of 351 sets of data (SUFE, see table 3) qualified as double degree students who had found a job right upon graduation or shortly thereafter and 369 such data qualified for SDAU respectively (see table 2). Entries that did not qualify were either entries of students who had not found a job yet or had only received the SUFE bachelor degree (SUFE). All entries of the SDAU data were entries of double degree graduates, but in one instance the degree status was not indicated and one entry was repeated twice.

The FOM data on Chinese master graduates were surveyed via a word-document questionnaire that was distributed to the students through email in March 2014. Since graduates were contacted individually by phone prior to the survey and were asked whether they would participate or not a total of 16 graduates out of 22 who had been phoned agreed to take part and eventually returned the answered questionnaire.

After having analyzed these primary data further secondary data are employed in order to assess cultural implications that need to be considered when conducting graduate surveys among Chinese graduates. By combining the results of the primary data analysis with these cultural conditions hypotheses in regard to how graduate research concerning this culturally distinct group of graduates can be more successfully conducted are formulated towards the end of this paper.

2 The FOM-programs for Chinese students

2.1 Development of degree programs since 2002

Since the fall semester of 2002/03 Chinese students have been entering FOM-study programs and more than 2000 students have successfully completed their studies by now. Initially students qualified as a *Diplom-Kaufmann / -frau (FH)* in economics, a traditional German degree that was later replaced by a bachelor degree in business administration. Semester one through four of these undergraduate studies are carried out on the campuses of two cooperation partners in China. One FOM-study centre is located in Taiyuan on the campus of the Shanxi University of Finance & Economics (SUFE). The second FOM-study centre started teaching in September 2003 in Tai'an (province of Shandong) in cooperation with the Shandong Agricultural University (SDAU). Semesters five and six are then taught at the FOM-study center in Essen. All Chinese undergraduate students who study in this program participate in a one-year German course prior to their studies since the program is taught in German only. Also all of these students seek to obtain a double degree as the Chinese partner universities acknowledge modules of the FOM bachelor degree program.

Apart from this undergraduate program two graduate programs have been created to meet the needs of Chinese students in economics. Since 2009 a master of arts degree program (M.A.) in German in *accounting & financial management* and *international marketing* has been so far elected by more than 600 Chinese students, most of which prior to this had obtained a FOM bachelor degree.

In 2011 the FOM-GSSBT introduced two more cooperations with the College of Mobile Telecommunications, Chongqing University of Posts and Telecom and the Beijing Institute of Petrochemical Technology. The aim of this English language FOM master of arts program in *accounting & financial management* is to educate Chinese bachelor graduates with an interest in German culture and in economics who have not studied German before.

All in all the above-mentioned three degree programs have so far produced a variety of different careers that so far have been assessed mainly through general statistical data that were collected upon enrolment and graduation, through personal communication at alumni gatherings and through a qualitative

survey among graduates who currently work in Germany. The insights that these data so far provide are now analyzed in the next chapter.

2.2 General employment situation of Chinese FOM graduates

In regard to the double-degree Chinese bachelor graduates both cooperation partners have started to collect statistical data on these graduates' career development since 2008. These data depict the status of job-search upon graduation or shortly thereafter, but they are neither complete nor do they provide information on the exact job-position, responsibilities or salary. Also, the career-development of the graduates is not further followed. What can be basically deducted from these data is in what kind of company the students found a job or in what kind of market they started their first job.

The data of Shandong Agricultural University are in the shape of annual lists (2008 – 2012) that cover those students who already found a job right upon graduation or shortly thereafter. In total these are 369 students who have started their career as follows:

***Table 2**:* Chinese FOM bachelor graduates at SDAU (2008 – 2012)

Job place / Study focus	Govern-ment	Chinese State Company	Chinese Bank	Chinese SME+ Corpo-rate	Foreign SME	Intl. Corporate Company
Accounting 87 graduates with a job	23	26	20	13+5	0	0
Intl. Economics & Trade 217 graduates with a job	62	53	33	43+19	2	5
Business Admin. 65 graduates with a job	16	19	11	13+5	0	1
Total number of graduates with job 369	101	98	64	69+29	2	6

Source: author's own based on internal SDAU data.

The most frequent careers of these SDAU bachelor graduates are as government officials, in Chinese state companies or in Chinese SMEs (more than 25% each), closely followed by a banking job (more than 15%). Only 2% started to work in a foreign company.

The data-set of Shanxi University of Finance & Economics is arranged in a slightly different way. Apart from a greater variety of study foci on offer the total number of 1244 entries is listed in 8 different charts according to the graduates' study focus. More than one in four graduates finds a job right upon graduation (28,22%) which is a relatively high quota as almost 50% of the graduates continue to study in a master program right away. Consequently, it is actually more than one of two students who can get a job right away which either underlines the still-existing job-placement of offspring through the parents networking (*guanxi*) or speaks in favour of a comparatively high job acceptance of the bachelor degree similar to the situation in Germany[9] or both.

The numerical results of the SUFE bachelor graduates' job finding situation is similar to the SDAU graduates' as not a single graduate started working in a foreign company. Very different, however, is the exceedingly large number of graduates who started working in a Chinese SME (almost 60% and therefore more than double the number at SDAU). Therefore, on the other hand, less than 1% of the graduates took on a job with a state company (as opposed to more than 25% at SDAU). This may be due to the fact that many state companies that dealt in coal mining in Shanxi have been merged, closed or privatized during the last decade. The number of SUFE bachelor graduates who work at a bank (19%) or work as a government officials (21%) are only slightly lower figures than the SDAU ones.

The detailed data of the SUFE bachelor graduates' career situation right after graduation is as follows:

9 Cf. http://www.uni-kassel.de/wz1/absolventen/INCHER_BachelorBericht_2010_DE.pdf accessed 01.04.2014, p. 3.

***Table 3**:* Chinese FOM bachelor graduates at SUFE (2006 – 2013)

Job place / Study focus	Govern-ment	Chinese State Company	Chinese Bank	Chinese SME	Foreign SME	Intl. Corporate Company
Accounting 91 graduates with job	14	0	12	65	0	0
Intl. Economics & Trade 33 graduates with job	12	0	7	14	0	0
Business Admin. 40 graduates with job	9	1	6	24	0	0
Financial Mgt. 14 graduates with job	3	1	4	6	0	0
Finance 100 graduates with job	12	1	29	58	0	0
Marketing 51 graduates with job	20	0	7	24	0	0
Logistics 9 graduates with job	0	0	0	9	0	0
other subjects 13 graduates with job	4	0	1	8	0	0
Total number of graduates 351 with job	74	3	66	208	0	0

Source: author's own based on internal SUFE data.

As far as the master student's job-situation is concerned there is no set of data comparable to the ones that are available for the bachelor graduates at SDAU and SUFE. However, a questionnaire was distributed to 16 Chinese FOM-master graduates who had taken on a job or had founded their own business in Germany right after graduation. This sample of the group of graduates who do work in Germany is in so far representative as it reflects roughly a third of all the students who have remained in the country after graduation.

2.3 Typical career paths of Chinese FOM master graduates working in Germany

Being graduates of a university of applied sciences more than 50% of the Chinese FOM-master graduates who take on a job in Germany do so working for an SME (see table 4). Especially medium-sized companies that increasingly operate in an international environment seem to be in need of young professionals who have international experience, especially in large new emerging markets such as China. The following table shows the distribution of work places of the sample group of 16 Chinese FOM-master graduates (return quota: 16 out of 22 or 72,73%) who took on a job in Germany right after graduation.

***Table 4**:* Chinese FOM-master graduates working in Germany (2009 – 2013)

type of company / **no. of graduates**	**self-employed**	***Chinese SME***	**PhD-program/lecturer**	**Chinese-German SME (recent M&A)**	***German SME***	**Intl. Corporate Company**
16	2	***4***	2	1	***4***	3

Source: author's own based on internal FOM-data.

From table 4 three distinct career paths can be discerned: Student A is the model graduate who works in a company that operates at the interface of the German-Chinese market, whereas student B starts his own business at the same interface and student C pursues a mere academic career. Some distinct differences between these three groups can be discerned. First of all there are certain criteria that these graduates consider to be of importance when pursuing a career in Germany. The most important criteria that were named in the free-text answers to this question are listed in table 5:

***Table 5**:* Important criteria for a career in Germany from Chinese FOM master graduates' point of view (free text, no MC-questions)

criterion / type of graduates	Lan-guage	Intercultural communica-tion skills	Specialized knowledge	Self-confidence
Working at interface of German-Chinese market (12)	12	6	3	2
Self-employed at interface of German-Chinese market (2)	2	1	1	0
Academic career (2)	1	0	0	1
Total: 16 graduates	15	7	4	3

Source: author's own based on results of part 2, question 1 of bilingual paper survey (German – Chinese) conducted by FOM-employee Shuai Mu (see appendix 1)

Almost all graduates agree that *language competency* is the most important success factor when pursuing a career in Germany and almost half of them consider *intercultural communication skills* another key success factor. Specialized knowledge as a criterion was named only by one of four graduates – this is a surprising result as from experience bachelor students carefully discuss the choice of their study focus before registering for a master program. Interesting enough the factor *self-confidence* was highlighted by two of the three students who work for international corporate companies in that they further described the necessity to develop the ability for critical questioning, thinking and independent problem solving. In particular those students who work in large corporate companies also quite elaborated on this point. One student criticized that Chinese young professionals "not necessarily need to attain a German way of thinking, but that Chinese students absolutely have to change their passive way of thinking (不一定达到德式思维，但一定要转变中国学生普遍的被动式思维方式)."[10] What is meant by the expression *passive way of thinking* is probably a lack of initiative as taking the initiative is required on the job as another student states in more detail: "The ability of taking on real job-responsibility is necessary, which comprises not only fulfilling the tasks that one receives from the boss, but even more so to think ahead of what is required by the boss. One has to be able to develop one's own thoughts instead of just blindly accepting

10 Result of part 2, question 1 of bilingual paper survey (German – Chinese) conducted by FOM-employee Shuai Mu, March 2014.

everything（要有自主管理工作的能力，这包括不仅仅做好老板交给你的任务，而且要想在老板之前; 另外要有自己独立的思考能力，不能盲目的接受一切)."[11]

Regarded on the whole language and intercultural communication skills are considered to be the *conditio sine qua non* by this small sample group of Chinese FOM-master graduates. Whether these first insights withstand substantial quantative testing and whether the assumed overall distribution of Chinese FOM-GSSBT graduates (see figure 1) meets the actual situation needs to be explored by further research. How this research could be conducted is examined in the next chapter.

11 Ibid.

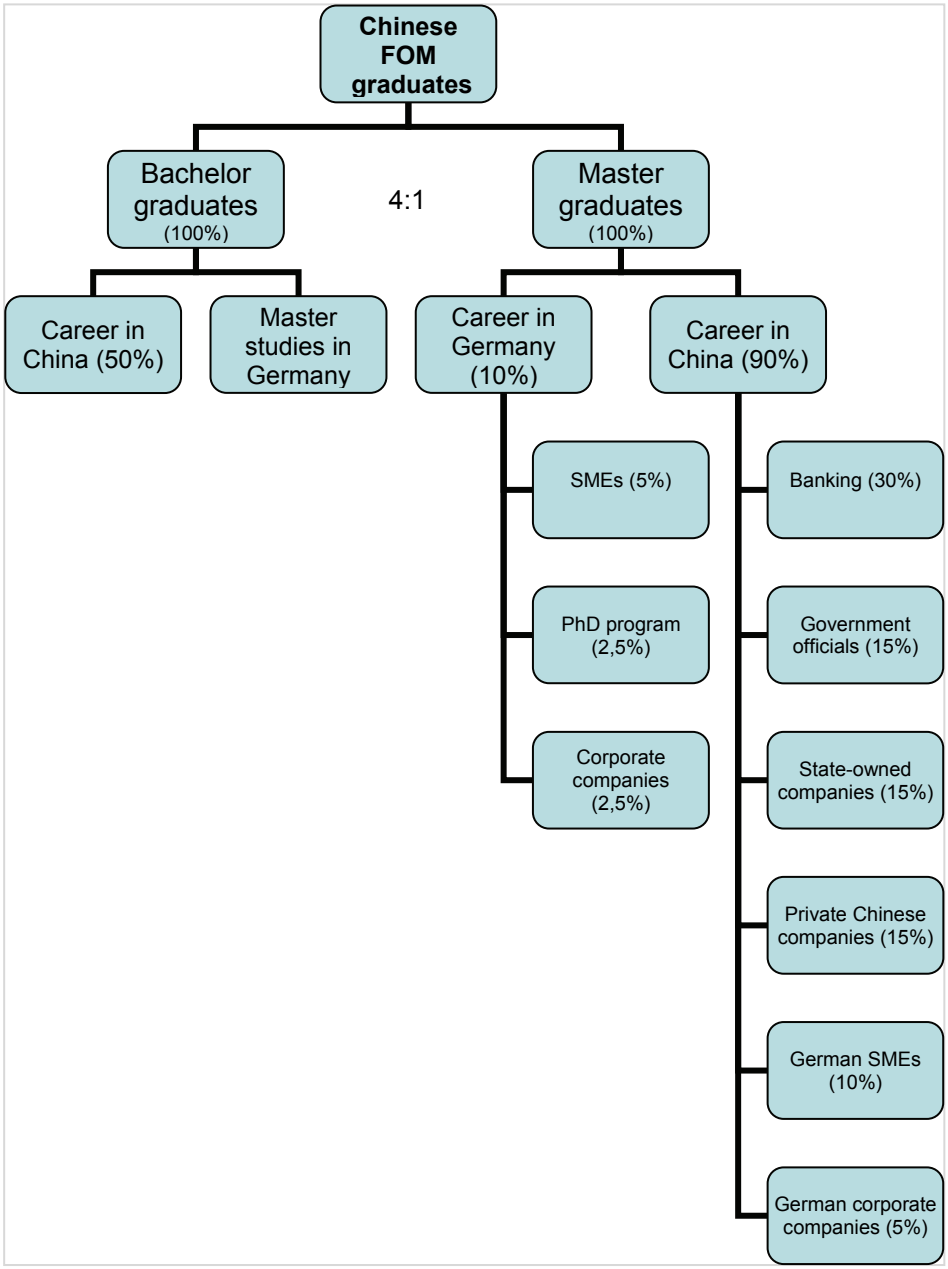

***Figure 1*:** Career paths of Chinese FOM-graduates (estimate in %)

Source: author's own based on bilingual paper survey (German – Chinese) conducted by Shuai Mu among master graduates and internal FOM- registration data.

3 Future FOM-GSSBT alumni research

3.1 FOM-KOAB graduate research among German FOM graduates

Since 2008 the FOM participates in one of the most comprehensive German graduate surveys, the 2007-started KOAB-survey, a cooperation project that is coordinated by the INCHER research institute of Kassel university.[12] More than 75 German universities are part of this project in the course of which students are questioned 1,5 years after graduation on how their career has advanced and what their study conditions and contents have been. Four to five years after graduation another panel survey is conducted in order to trace the students' career development and a total of over 100.000 students have so far taken part in this ongoing survey.[13]

The situation of the FOM as a university of applied sciences is a particular one in comparison to other German universities as most of its students study along with the job. Therefore quite a few questions of the questionnaire that the FOM distributes among its graduates in the course of the KOAB-project are different from the questions that former fulltime university students receive. For example it certainly is of interest how the job profile changed from the time when the graduates started studying in comparison to what happened in their career after graduation – a question that is irrelevant to almost all fulltime students. Accordingly certain questions in the questionnaire are repeated with the aim to explicitly compare these two points of time of the graduates' career, for example:

"C11 Welche berufliche Stellung hatten Sie bei Beginn des Studiums? [Which job position did you have at the beginning of your studies?]" versus G 3 Welche berufliche Stellung haben Sie derzeit? [Which job position do you have now?]"[14]

Also it is explicitly asked how relevant the study type of studying along with the job is for their career development after graduation (question F6, aspect 14).[15]

12 Cf. http://www.fom.de/forschung/projekte/laufende-projekte/vergleichende-analyse-des-studienerfolgs.html accessed 01.04.2014.

13 Cf. http://koab.uni-kassel.de/was-ist-koab; http://koab.uni-kassel.de/was-ist-koab/aktuell-beteiligte-hochschulen.html accessed 01.04.2014.

14 FOM-KOAB graduate questionnaire 2012, p. 14; p. 21.

15 Cf. FOM-KOAB graduate questionnaire 2012, p. 20.

Although all Chinese FOM-GSSBT-graduates have been fulltime-students at the FOM this group of graduates yet has benefited from a system in which students are taught by lecturers with subject-relevant job-experience and where they get in touch with German students who study along with the job. Further, the Chinese students regularly participate in guided company visits[16] and are confronted with numerous case studies, thus gaining job-relevant practical insights. Hence, though the FOM-questionnaire of the FOM-KOAB survey is already different from other participating German universities' it still needs to be modified again in order to mirror the Chinese FOM graduates' situation.

3.2 Critical analytical remarks and suggestions for FOM research on Chinese FOM-GSSBT graduates' career development

The questionnaire's necessary modifications in regard to the FOM-GSSBT's Chinese graduates are basically of a two-fold nature: On the one hand the fulltime student situation at a university of applied sciences must be accounted for and on the other hand the students' distinct cultural background must be taken into consideration.

As far as the school type and study model are concerned at least the two following aspects need to be reflected in the questionnaire: First of all in regard to the Chinese FOM-students' teaching staff who also can draw from subject-related job experience when teaching, certain question areas from the FOM-KOAB questionnaire should be kept when surveying Chinese FOM-graduates. For example question F6 mentioned above would be of interest in order to find out whether studying at a university of applied sciences could have certain relevant advantages for Chinese students' career development in comparison to studying at a university. In order to receive more detailed results, it should (being the second aspect) be combined with a modified version of the following question:

16 On average the FOM-GSSBT offers company tours on a monthly basis. Cf. http://www.china.fom.de/aktuelles.html accessed 06.04.2014.

D5 Wie beurteilen Sie die folgenden praxis- und berufsbezogenen Elemente in Ihrem Studiengang an der FOM? [How did the FOM do in regard to the following job-related elements?]

- Aktualität der vermittelten Lehrinhalte bezogen auf die Praxisanforderungen [up-to-date curriculi in regard to actual job requirements]
- Verknüpfung von Theorie und Praxis [combination of theory and application]
- Unterstützung bei der Stellensuche [job-search support]
- Angebot berufsorientierender Veranstaltungen [job-info sessions]
- Unterstützung bei der Suche geeigneter Praktikumsplätze [search support for apprenticeship vacancies]
- Lehrende aus der Praxis [practitioners as teaching staff]
- Praxisbezogene Lehrinhalte [curriculi that qualify for job requirements]
- Projekte im Studium… [projects as part of the studies]
- Pflichtpraktika/… [obligatory apprenticeships/…]
- Lehrangebote zu den Folgen wissenschaftlicher Anwendungen (z . B. ökonomische, soziale oder Umweltfolgen, Technikfolgenabschätzung) [teaching sessions on the topic *repercussions of scientific application* (ie, economic ones, social ones, environmental repercussions, estimate on possible repercussions of technical innovations]
- Angebote zum Erwerb von Schlüsselkompetenzen [offers for key competency development]
- Hochschullehrer/innen mit Praxiserfahrung [university teachers with job experience apart from teaching]
- Exkursionen [excursions]
- Anwendbarkeit des erworbenen Wissens im Beruf während des Studiums [applicability of acquired knowledge on the job while studying]
- Schriftliche Arbeiten im Bezug auf die berufliche Tätigkeit [term papers with a focus on one's current job]
- Inhaltlicher Bezug auf ihre berufliche Tätigkeit in den Lehrveranstaltungen [connection of one's job to the study courses' content]"[17]

17 FOM-KOAB graduate questionnaire 2012, pp. 17f.

Instead of asking the Chinese graduates how the FOM did in regard to the points mentioned above they should be rather asked which of these points were relevant for them and if yes, if and how these should be improved. Also, the first and the last three points of the 16 points listed above are of course irrelevant to fulltime students. Since the sample survey among the Chinese FOM master graduates who now work in Germany revealed that they did at least one apprenticeship in Germany while studying, this point should be further highlighted in the questionnaire. Also the term key competencies should be considered in the light of the graduates' answer that language skills and intercultural communication skills are very important in order to be able to work in Germany. Therefore in a questionnaire that is adapted to this study group's needs section D5 could be designed as follows (order of elements changed, some cancelled and modified ones in bold letters):

D5 **Which of the following job-related elements do you think has been of importance for your career and if yes, how could the FOM improve in these points?**

- combination of theory and application
- practitioners as teaching staff
- curriculi that match job requirements
- projects as part of the studies
- **offers to enhance German language competency**
- **offers to enhance English language competency**
- **excursions with a focus on**
  - visiting companies
  -cultural sight-seeing
  -practical activities, ie participation in a radio program
- job-search support
- **search and application support for apprenticeship positions**

Doing an apprenticeship is the first practical job experience for many students. How could the FOM improve in regard to…
… search support for apprenticeship vacancies?
… CV-coaching?
… job-interview coaching?
… general intercultural training in preparation for working in a German or international company?

This last question on how to give ideal search and application support for apprenticeships is a field that requires intercultural sensitivity. Certain intercultural insights that are analyzed in the final section of this paper are necessary in order to be able to design such questions in a way so that Chinese graduates are also ready to answer these questions.

3.3 Intercultural aspects in regard to research on Chinese FOM-GSSBT graduates' career development

The cultural differences that do exist between German and Chinese students must be taken into special consideration when designing a questionnaire for a group of students such as the Chinese FOM-graduates. Just as Hofstede's dictum "the business of international business is culture"[18] points out the importance of intercultural competencies when doing business this insight must be just as valid when conducting scientific research.

The way paper and pencil surveys are traditionally conducted in the west already provoke a clash with Chinese culture. This can probably most easily be exemplified when looking at the six dimensions that Hofstede employs in order to compare country cultures. In comparison to US-American culture, for example, Chinese culture is described as being rather pragmatic, reaching an index of 87 as opposed to 26 (US). This may not be a perfect basis for a survey if a questionnaire is not really *questioned* by the Chinese participant, but rather seen as a task that is to be fulfilled within a certain time-limit in the first place.[19]

18 Hofstede, G. H. (1999), p. 381.

19 Cf. http://geert-hofstede.com/china.html accessed 08.04.2014.

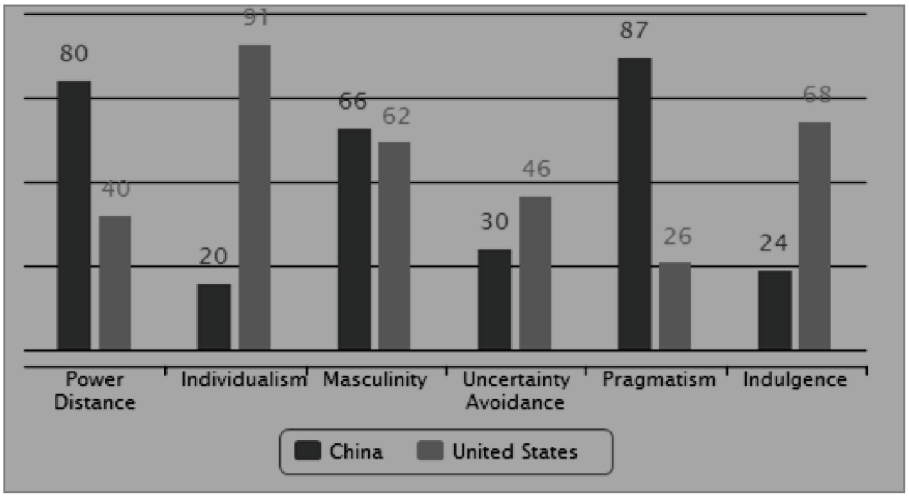

Figure 2: Hofstede's 5 dimensions – China compared to the US

Source: http://geert-hofstede.com/china.html accessed 08.04.2014.

Also as Chinese education still mainly consists of learning by hard activities, as students are mainly extrinsically motivated and concrete thinking skills are more trained than objective ones[20] a real understanding which higher purpose one's *individual* contribution in a survey can really serve cannot be expected – in particular on the basis of one of the lowest individualism indices (only 20 as compared to 91 in the US) in the world (see figure 2). Although the Chinese Government has sought to introduce interactive teaching methods and to instigate intrinsic motivation in students by the help of reforms since 1994 already in order to let Chinese students become more creative and inventive[21] the results so far are doubtful or at least tentative (only 12 market relevant patents in China as opposed to 384 in Germany or 174 in the US, ie). [22]

Consequently the question at this particular point is – how can scientifically valuable survey results be achieved if Chinese people tend to group behaviour, accept strong hierarchies (see figure 2) and are trained to learn by hard? The key to this could be to put the survey focus on the group of *successful* graduates – meaning those graduates who have managed to pursue an

20 Cf. Cho, C. H.; Roberts, R. W.; Roberts; S. K. (2008), p.84.

21 Cf. Ye, L. (2008), pp. 17ff.

22 Cf. http://www.datenportal.bmbf.de/portal/de/B3.gus accessed 08.04.2014.

individual career path that has led them to management positions in which they have attained a relatively high degree of responsibility. This being a sign of individual strength it is most probable that these graduates will just as responsibly deal with the question of how their studies have helped (or hopefully not) failed them to achieve their current career status instead of following an assumed *Chinese culturally expected group opinion* when answering a graduate survey. Having gained this insight it is encouraging to know that the FOM-GSSBT's spot survey among those master graduates who have started their career in Germany was, from a scientific point of view, a logical first step in the field of graduate survey research among Chinese overseas graduates.

What needs to be explored further at this particular point is how this survey can be expanded to more graduates as the question remains how less successful students could have been better stimulated and supported in the course of their studies. Since these students probably have not managed to develop such a strong personality in comparison to their career-wise more successful former fellow students they cannot be approached on the grounds of the question of their career alone. They should maybe be approached in a culturally more adjusted way, meaning a more *indirect* and at the same time *high-context* way. Since studies repeatedly have shown that Chinese students tend to spend much of their rare free time online-gaming or chatting in social media (21,6 hours per week in June 2013 as opposed to 20,5 hours in December 2012)[23] in order to experience a minimum amount of individual space in an otherwise overcrowded collective society *the format* of the FOM-KOAB questionnaire should be changed accordingly. Only if such a *questionnaire* offers the chance for intrinsic motivation in that it meets these students' cultural needs and in that it also may be more *entertaining* to Chinese graduates a high response rate with real deliberation in regard to the questions can be expected. Otherwise all 5-point scales placed beneath the single questions will be checked right at number 3, leading to no results of interest, but only a reinforcement of specifically Chinese group behaviour.

Ideally such a questionnaire would be designed in the shape of an online game (or at least some format of a more interactive high-context shape) in the course of which the graduates virtually walk back into their student life at the FOM. Through single games or riddles they could reassess how they could have done

23 Cf. CNNIC (2013), p. 19.

better when studying at the FOM or find what really helped to start their career. After each single task they should be encouraged to write a few lines on their own what could have helped them at the time to have done better. By the help of such a to Chinese people probably more stimulating tool Chinese graduates could probably be more motivated to participate more openly in such a survey since it would meet the necessary stimulating criteria of their specific high context culture.

4 Conclusion

The Chinese desire to advance as a nation has developed a flux of Chinese overseas students that has increased since the end of the Qing dynasty in four distinct waves until today. Having reached the highest number of Chinese overseas students in its history, Germany enrolled a total of 23.883 Chinese in 2012. Since 2002 the FOM has started its study programs for Chinese students with cooperation partners in China and has so far developed one Bachelor and two master programs with different foci in order to meet the demand of Chinese students for German bachelor and master degrees.

The aim of this paper to delineate career paths of former Chinese FOM students and to develop ideas that can help improve further research in the field of graduate career development has come to the following results: In chapter two the analyzed data showed that almost all bachelor graduates who take on a job do so within China and with a Chinese company or the Chinese state. Clearly only a master degree lays the foundation for a possible future career in a foreign company so far. Also half of the bachelor graduates continue to study in a master program in Germany, half of those again with the FOM. The only clear industry focus that can be discerned for both bachelor and master graduates is the banking industry which is also reflected in the number of graduates who had a study focus in finance or accounting.

Chapter three then showed that first of all language skills and then intercultural communication skills are the key competencies that are required for a career in Germany. This result of the sample survey among the Chinese FOM master graduates who have started their career in Germany stands in line with the result that next to no bachelor graduates take on a job in Germany or in an international company right after graduation. 50% of them want to further enhance these skills by pursuing master studies in Germany. The necessary period of adjustment in regard to language and social skill learning in Germany that qualifies for a full-time job position in Germany clearly exceeds the length of only one year that is typical for a Chinese FOM bachelor graduate. In order to be able to find out more about the connection between the FOM study programs for Chinese students and their later career success the existing FOM-KOAB questionnaire was analyzed. The result of this analysis is that questions in regard to the applied knowledge to which the Chinese students get access to at the FOM should be kept, but also should be modified in a way so that these questions relate to their situation as fulltime students. In this way it can be

analyzed, for example, whether practitioners and professors with practical job-experience can better prepare Chinese students for job situations in Germany than fulltime professors with no practical job-experience apart from the teaching and research one or not. Finally the question of cultural differences showed that *traditional paper and pencil surveys* can lead to blurred results when these surveys are taken by students of collectivist, practical societies with strong hierarchies such as China. The author's suggestion for future surveys therefore is to design these in a way that meets the cultural needs of a high-context culture such as China. Since China currently develops its individual characteristics of the only-children generation of *little emperors* who increasingly spend time online such surveys could be designed as online-games, for example, instead of mere 5-point scale questionnaires. In this way more *real* individual responses could be generated that could help analyze how study-curriculi could be improved in order to qualify more Chinese students for the Sino-German job market – a qualification that all parties involved can benefit from.

Appendix

Alumni-Befragung 毕业生问卷调查

Paper survey among FOM master graduates (March 2014)

Teil 1: Befragung zum Alumni-Netzwerk 校友会问卷调查

Folgende Befragung kann auf Deutsch oder Chinesisch durchgeführt werden.
以下问卷调查可以用德语或者中文完成。

1. Was erwarten Sie vom Alumni-Netzwerk?
   你希望从校友会中获得什么？
   - ☐ 1) ehemalige Kommilitoninnen und Kommilitonen treffen 同学见面
   - ☐ 2) ehemalige Dozentinnen und Dozenten treffen 老师见面
   - ☐ 3) Aktuelles über die FOM erfahren 了解学校近况
   - ☐ 4) Berufserfahrungen austauschen 工作经验交流
   - 5) Sonstiges: 其它(请在下方用短句补充):

2. Was erwarten Sie von einem Alumni-Treffen?
   你希望校友聚会包括哪些活动？
   - ☐ 1) Gastvortrag 客座讲座
   - ☐ 2) Gemeinsames Essen 聚餐
   - ☐ 3) Besichtigung von Unternehmen oder Sehenswürdigkeiten 企业或名胜参观
   - ☐ 4) Freizeitaktivitäten z.B. Bowling, Singen, Wandern 业余活动例如，保龄球、唱歌、徒步郊游
   - 5) Sonstiges: 其它(请在下方用短句补充):

3. Wie oft sollte ein Alumni-Treffen stattfinden?
你希望校友聚会多久举行一次？

☐ 1) 2 Mal im Jahr 一年两次

☐ 2) 1 Mal im Jahr 一年一次

☐ 3) alle 2 bis 3 Jahre 两到三年一次

4. In welchen Städten sollte ein Alumni-Treffen stattfinden?
你希望校友聚会在哪个城市举行？

☐ 1) Essen 埃森

☐ 2) Frankfurt am Main 法兰克福

☐ 3) Düsseldorf 杜塞尔多夫

4) Sonstiges其它城市(请在下方用短句补充):

5. Sollte eine Online-Plattform z.B. QQ, Wechat etc. aufgebaut werden, um den Austausch zwischen Alumni zu fördern?
你认为是否应该建立一个网络平台(例如：QQ群，微信群)
来促进校友的相互交流？

☐ 1) ja 应该

☐ 2) nein 不应该

6. Sind Sie bereit, die Kosten weiterer Alumni-Treffen wie z. B. Verpflegung, Reisekosten, Übernachtungskosten selbst zu übernehmen?
你愿意承担或者分担未来校友聚会的费用
（例如：聚餐费用、场地租金、交通费、 住宿费）吗？

☐ 1) ja , weniger als 20 Euro 愿意，少于20欧元

☐ 2) ja , weniger als 50 Euro 愿意，少于50欧元

☐ 3) ja, weniger als 100 Euro 愿意，少于100欧元

☐ 4) nein 不愿意

7. Sind Sie bereit, weitere Alumni-Treffen zu organisieren oder bei der Organisation
   zu helfen?
   你愿意参与组织校友聚会吗？

   ☐ 1) ja 愿意

   ☐ 2) nein 不愿意

Teil 2: Befragung zur Berufstätigkeit 就业情况调查

Folgende Befragung kann auf Deutsch oder Chinesisch durchgeführt werden. Im Rahmen dieser Befragung können einzelne Fragen entweder mit Sätzen oder mit Stichwörtern beantwortet werden.
以下问卷调查可以用德语或者中文完成。问题可以通过完整的句子或者简短的词语来回答。

1. Welche Kriterien halten Sie für wichtig, wenn Chinesen in Deutschland Karrieren machen möchten?
   你认为哪些因素对于中国人在德国工作很重要？

2. Inwiefern war das FOM-Studium hilfreich für Ihre beruflichen Erfolge?
   之前在FOM的学习经历对你现在的职业发展有哪些帮助？

3. Welche Vorschläge haben Sie für die aktuellen chinesischen Studierenden der FOM, die zukünftig in Deutschland ins Berufsleben starten möchten?
   很多FOM在读的中国学生希望将来能够在德国就业，你对他们有何建议？

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Part 4 Managing Competitiveness

J The international competitiveness of Germany – status quo and perspectives

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Abstract

The Global Competitiveness Report of the World Economic Forum represents a comprehensive study of the international competitiveness of individual countries. It combines data from national statistics with a survey among leading managers.

The analysis of the relative performance of Germany in the latest Global Competitiveness Report 2013-2014 should be used by politicians in Germany not to stop with the recent economic reforms, as much more seems to be necessary to secure productivity growth and high competitiveness in the future.

Germany´s economic success relies upon export-oriented manufacturing, diversified economies, strong small and medium enterprises and fiscal discipline. However labour market efficiency and the tax system are the major fields for future improvements and policy reforms.

Keywords

International competitiveness, economic reforms, trade theories

Table of Content

List of Abbreviations

BaFin	Federal Financial Supervisory Authority
BMF	Federal Ministry of Finance
CESifo	ifo Institut, Center for Economic Studies
DIW	German Institute for Economic Research
ECB	European Central Bank
EMU	European Monetary Union
EU	European Union
EUR	Euro
GCR	Global competitiveness report
GDP	Gross domestic product
GTAI	Germany Trade and Invest
IFC	International Finance Corporation
IFW	Institute for the World Economy
IMD	Institute for Management Development
IPS	Industrial Policy Studies
IWH	Halle Institute for Economic Research
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
R&D	Research and Development
RWI	Rheinland-Westfalen Institute for Economic Research
SME	Small and medium sized enterprises
WCY	World Competitiveness Yearbook
WEF	World Economic Forum

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1 Concepts of competitiveness[2]

1.1 Traditional trade theories

1.1.1 Mercantilism

Three major theories on trade were established before the 20th century and are regarded as traditional trade theories. They are called mercantilism, absolute advantage and comparative advantage.[3]

Mercantilism considered the trade in the 1600s and 1700s as a "zero-sum game": One nation's gain represents another nation's loss.[4] Supporters of mercantilist policy like Jean-Baptiste Colbert supposed that the world's wealth which was calculated in gold and silver was already determined. Furthermore, a nation receives higher inflows of gold and silver when it exports more than it imports. By this way it was possible for a nation to become richer. On the other side, when a nation imports more than it exports, it becomes poorer. Therefore, the products which were popular in foreign countries were increasingly produced under state regulation. Thereby, the state tried to increase its income by monopolies or exclusive sales rights to certain products, e.g. salt. As a result, the economy was shackled by the state.[5]

Apart from France, England was also a center of mercantilism. England supported its agriculture by bans of import of grains in years with good harvests and bans of export of grains in poorer years. Also custom duties on imported goods were much higher than custom duties on exported goods and processing of raw materials was banned in England's colonies. Through the import of raw materials, processing them in England and exporting the produced goods back to the colonies, England strengthened its economy. Within this setup, the country also benefited from its world leading merchant fleet, because goods were required to be transported only by English ships. Thereby both the state and the merchants benefited.[6]

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2 My special thanks go to Julia Paschinin who worked on different explanations of trade within an assignment under my supervision.

3 Cf. Peng, M. W., Meyer, K. E. (2011), p. 134.

4 Ibid.

5 Cf. Olten, R. (1995), p. 33; Reiß, W. (2007), p. 15.

6 Cf. Reiß, W. (2007), p. 15f.

In modern days, the doctrines of mercantilism can be found in protectionism: The idea is that governments should safeguard the domestic industry from imports from other countries and push exports actively. As an example, after the financial crisis of 2008 many countries implemented some form of protectionist policies. The so called “Buy-American” condition in the US economic stimulus package was one of those.[7]

1.1.1 Absolute advantage

The theory of the absolute advantage describes a free trade approach that is still being influential today. Here, the invisible hand of the market, in contrast to the government in mercantilist systems, identifies the scale and the scope of economic movements. Adam Smith, as the pioneer of the absolute advantage, believed that an economic system results from the self-interest of individuals. According to his view, an individual and societal wealth could only result from human labor. The state's role should just be limited to three duties: establishing security and regularity, maintaining accurate administration of justice and providing public goods.[8] Thereby Adam Smith emphasizes free trade without hindering trade barriers. Free trade is based on the idea of optional exchange. This includes the intention of the exchange partners to deliver a certain quantity of a good and to receive a certain amount of another asset. This exchange rate is known as a price and serves as a control mechanism in the market.[9]

The general market principals also apply to international trade: In contrast to the mercantilist approach that recommends a nation to produce a fairly wide range of products, the theory of the absolute advantage points out that a nation should concentrate on producing goods or services in which it has an advantage compared to other nations. A nation possesses an absolute advantage, when it enjoys a superior position by producing of some goods. Moreover Adam Smith emphasizes two points: Firstly, by concentrating on the manufacturing of goods with an absolute advantage and trading, two nations each can manufacture more. Secondly, by trading both nations can profit – in other words: the situation is better for each nation in comparison to mercantilism.[10]

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7 Cf. Peng, M. W., Meyer, K. E. (2011), p. 135; Riecke, T. (2009); FocusOnline (2009).

8 Cf. Olten, R. (1995), p. 33ff.; Peng, M. W., Meyer, K. E. (2011), p. 135; Reiß, W. (2007), p. 18; Pomfret, R. (1991), p. 11.

9 Cf. Olten, R. (1995), p. 34ff.; W. (2007), p. 44f.; Mantzavinos, C. (1994), p. 17f.

10 Cf. Peng, M. W., Meyer, K. E. (2011), p. 135; Pomfret, R. (1991), p. 11f..

1.1.2 Comparative advantage

The concept of the absolute advantage is rarely applicable in practice, e.g. because a nation might not have any absolute advantage or the produced goods of a nation are too low-grade for another country. But this deficit can still be cured through trade according to the theory of the comparative advantage. The British economist David Ricardo has developed this theory in 1817. It focuses on a relative cost advantage of products – measured in terms of opportunity costs - in comparison to other nations. In summary the theory of the comparative advantage shows a possibility for countries without an absolute advantage to decide how to organize production schemes and how to benefit from free trade.[11]

The source of both the absolute and the comparative advantage can be found in the economic deviation of productivity. Adam Smith and David Ricardo observed productivity differences: absolute and relative. As a reason the absolute advantage represents a special case of the comparative advantage approach. The productivity differences are based on divergent economic potentials of different countries that can be explained by the availability of the factors of production (labour, technology and land).[12] Based on this idea, Swedish economists Eli Hecksher and Bertil Ohlin propose that nations should export goods that absorb production factors the countries have a relative surplus of.[13]

1.2 New trade theories

1.2.1 Product life cycle

While the traditional theories were developed before the 20th century, the new trade theories have been developed later on. The main ones are the product life cycle, the strategic trade theory and the concept of the national competitive advantage. The main difference between traditional and new theories is in a static versus a dynamic analysis in the theories. E.g. the traditional theory says that if England possesses an absolute and a comparative advantage in

11 Cf. Pomfret, R. (1991), p. 12.

12 Cf. Reiß, W. (2007), p. 68; Peng, M. W., Meyer, K. E. (2011), p. 138; Klump, R. (2011), p. 99f.; Reiß, W. (2007), p. 68.

13 Cf. Rivera-Batiz, L. A., Oliva, M.-A. (2003), p. 37; Heckscher, E. F., Ohlin, B. (1991), p. 26.

producing textiles, which is based on factors like weather and land, it should export textiles. Following this idea it is plain to see that at the time when the traditional theories emerged, England had been the largest textile exporter. Today, the textile production is rather insignificant in England. The assumption that a strong change in weather conditions and land were the reason for the modern insignificancy of the textile industry in England is unrealistic. A similar development can be identified with Japan and its computer industry. Since the 1990's Japan has become an importer of personal computers, although Japan was an exporter until then.[14]

The assumption that the available resources and trading conditions remain unchanged is far from reality. Due to this fact, Raymond Vernon of Harvard and Seev Hirsch of Tel Aviv proposed the theory of the product life cycle. This dynamic theory deals with the changes in trading conditions over time after careful consideration of the product life cycle. The theory divides countries into three clusters: “lead innovation nations”[15], “other developed nations”[16] and “developing nations”[17]. For example, Vernon defines the USA as a lead innovation nation due to the innovation and performance readiness of its companies associated with higher income level.[18] According to Vernon the product life cycle consists of three phases: “new, maturing and standardized”[19]. In the first phase of the product life cycle the manufacturing of a product is centered in a lead innovative nation. The country can sell and export the products to other developed countries. In the maturing stage, the demand for the product and the manufacturing requirements are also available in other developed countries, so that it is now economically feasible to produce here. In the third phase, the manufacturing is already standardized. Therefore, the manufacturing plant can be relocated to lower-cost developing countries, which will export the products to the developed countries. The theory points out that a comparative advantage can change over the life cycle.[20]

14 Cf. Peng, M. W., Meyer, K. E. (2011), p. 139f..
15 Peng, M. W., Meyer, K. E. (2011), p. 140.
16 Ibid.
17 Ibid.
18 Cf. Vernon, R. (1966), p. 192ff..
19 Ibid., p. 192-196.
20 Cf. Ayal, I. (1981), p. 91ff.; Vernon, R. (1966), p. 192ff.; Peng, M. W., Meyer, K. E. (2011), p. 140.

However, this theory abuts on two critical points: Many new products are nowadays developed and produced in other countries than the USA. USA was the lead innovation nation after the Second World War but this was an extraordinary period. There are other countries in addition to USA that are considered as lead innovation nation, e.g. Germany, Japan, etc. The second point is that according to this theory it may take a few years until a product moves from one life cycle phase to another one. However, in the 21th century this assumption is invalid because quite often competitors market new products at the same time, like it is e.g. on the smartphone market.[21]

1.2.2 Strategic trade theory

The previously discussed theories, except mercantilism, have disregarded the role of the government. Since the classical liberalism of Adam Smith the role of government is viewed as disruptive to the free market. The strategic trade theory having been developed in the 1970s, deals with the role of the government in supporting trade. The theory explains that a strategic intervention by the government in selected industrial sectors can strengthen a country's international success. These selected industries differ from the others by "high up-front costs of entry, notably investments in research and in capability development and they tend to be highly capital-intensive which creates high entry-barriers"[22]. As a result whoever enters this market first has such a strong comparative advantage that he can enjoy all benefits without having to worry about other participant. An example is given by the engines and aircraft industry. Boeing was founded in 1915 and has been supported and strengthened by the government during the Second World War. Consequently, the company has become the largest manufacturer of aircraft.[23] Due to this dominance and dependence on the United States government, the European governments decided to create a strong competitor for the U.S. American company by strategic intervention.[24] Therefore, the governments of the United Kingdom, Germany, France and Spain decided to bring Airbus on the market

21 Cf. Peng, M. W., Meyer, K. E. (2011), p. 141.
22 Ibid.
23 Cf. Der Spiegel (1967).
24 Cf. Reuters Deutschland (2012).

and provide financial support.[25] Currently Airbus and Boeing have an equal share in the global market for aircraft.[26]

Overall, the strategic trade policy can change and influence the strategic cooperation between the companies. Therefore the theory encounters potential problems. Due to strategic intervention and financial support, the government gets an insight into the cost structure of these companies. Secondly, a differentiation between the strategic importance of industries is not easy and unambiguous, e.g. the claims of the agriculture industry to be a strategically important in order to get more financial support from the state.[27]

1.2.3 National competitive advantage

The most current theory that is discussed here is the theory of the national competitive advantage of industries. This theory deals with the competitive advantages of specific industries within a country, which are internationally competitive as well. All in all the theory of national competitive advantage is the first theory to link companies, industries and nations together. The aspects which determine competitiveness are shown in the following figure.[28]

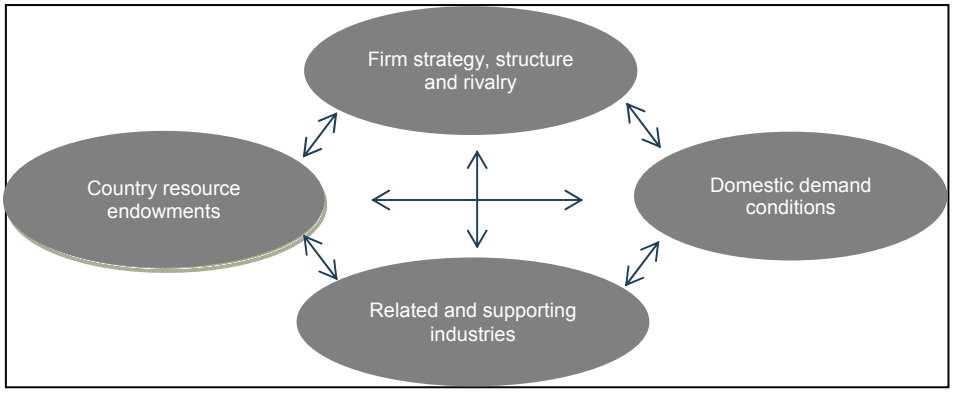

Figure 1: National competitive advantage of industries [29]

25 Cf. Sueddeutsche.de (2010).
26 Cf. Hepher, T., Altmeyer, C. (2013); Peng, M. W., Meyer, K. E. (2011), p. 141.
27 Ibid., p. 143.
28 Ibid., p. 71f..
29 Adapted from Porter, M. E. (1990), p. 72.

Firstly, capabilities such as natural resources, human capital, physical capital are considered. In addition to the mere availability of the production factors and of their qualitative characteristics, it is essential for the competitiveness of a nation to have the ability to create and ensure the efficient use of these factors. The mere focus on production capabilities as quoted in the previous theories is therefore not sufficient.[30]

Secondly, a tough domestic demand offers new opportunities for companies in achieving their own goals. This effect on competitiveness is associated with quantitative and qualitative consumer preferences and needs. Consumer preferences may provide incentives for the development of competitive advantages and economies of scale. To satisfy domestic demand, companies will be forced to develop a new standard in quality and performance. When these products are accepted by domestic demand, there is a great chance that a company will increase its profit and market share in a foreign market as well.[31]

The third point is firm strategy, structure and rivalry. It is about companies' aims, business strategies and organizational characteristics, management and managerial practices, entrepreneurial spirit in taking risks and capability in providing incentives and training for labor and company sale orientation. These points are important for the competitive advantage for companies. In order to ensure the competitiveness of a nation for an extended period, the following features are considered: company market structures in terms of quality and price competitiveness, barriers to entry and intensity of competition in between companies in the market or number of rivalries a company is facing in the market, and extent of vertical integration. In some industries, many internationally renowned competitors come from the same country such as in the German automobile industry represented by Volkswagen, BMW, Audi, Mercedes or in the German sports wear industry represented by Puma and Adidas.[32]

Forthly, related and supporting industries give an industry a chance to distinguish itself from international competitors and to gain a competitive advantage. In Germany it relates to sectors such as engineering. For example, without these related and supporting industries in the supply chain the

30 Cf. Porter, M. E. (1990), p. 73-75.

31 Ibid., p. 86-100.

32 Ibid., p. 100-107.

automobile industry in Germany cannot be competitive. However, the related and supporting industries can also be from other economic sectors such as banks and financial institutions that provide the company with the necessary liquidity.[33]

The above mentioned four aspects are thoroughly interdependent: changes in one aspect show an impact on the status of the other.[34]

All in all the national competitive advantage by Porter is the main theory that is used for current competitiveness models. The models created by the World Economic Forum and by the International Institute for Management Development are based on this theory.

33 Cf. Peng, M. W., Meyer, K. E. (2011), p. 144; Porter, M. E. (1990), p. 107-124.
34 Cf. Porter, M. E. (1990), p. 71f..

2 Status quo of Germany´s competitiveness[35]

2.1 The current economic situation in Germany

After the crisis year 2009 a consistent recovery process took hold, accompanied by a rising capacity utilization in industry and a strong domestic demand.[36] The positive effects of the quickly recovering German labour market were also perceptible. Increasing wages stabilized domestic consumption, which was the most important sector of the German economy after exports.[37] Post-crisis growth is slowing down considerably since 2012.[38] While annual real gross domestic product (GDP) growth reached 0.7 percent in 2012, after 3.3 percent in 2011, it was set to fall back sharply to around 0.4 percent in 2013.[39]

Table 1: Key economic data from Germany [40]

Key economic data	2011 actual	2012 actual	2013 actual	2014 forecast	2015 forecast
Real GDP (yoy change in %)	3,3	0,7	0,4	1,9	2,0
Unemployment rate (in %)	7,1	6,8	6,9	6,7	6,7
Consumer prices (yoy change in %)	2,1	2,0	1,5	1,3	1,8
Unit labour costs (yoy change in %)	0,8	2,8	2,0	1,4	2,0
Public deficit					
billion EUR	-21,5	2,3	0,3	3,6	14,0
% of nominal GDP	-0,8	0,1	0,0	0,1	0,5
Current account balance					
billion EUR	178,4	198,6	206,0	224,0	228,0
% of nominal GDP	6,8	7,4	7,5	7,9	7,7

In its spring 2014 projection, the leading German economic research institutions forecast that Germany's real GDP will grow by 1.9 percent in 2014 and by 2.0

35 My special thanks go to Rene Dörendahl and Sasa Dimitrijevic who worked on aspects of Germany's competitiveness within an assignment under my supervision.

36 Cf. Klodt H., Lehment H. (2009), p. 11-13.

37 Cf. Erber, G., Hagemann H., (2013), p.15; Deutsche Bundesbank (2014).

38 Cf. Bundesministerium für Wirtschaft und Technologie (2013a), p.7.

39 Cf. DIW (2014), Bundesministerium für Wirtschaft und Technologie (2013c), p. 38.

40 Based on DIW (2014), p. 360, and the definitions mentioned there.

percent in 2015. This growth is being driven by domestic demand, which is making German companies optimistic and is leading them to invest more in equipment and construction again. Consumer spending is up due to an appreciable rise in both the level of employment and incomes. Consumer prices are expected to rise by a moderate 1.3 percent in 2014 and by 1.8 percent in 2014. The German public budget will continue to show a surplus.[41]

The common expectation among all the estimates for 2014 and 2015 is that a renewed flare-up of the Eurozone crisis is unlikely and the German economy is going to take a further swing upwards from the previous growth weakness. The conditions for a rise in production are all there, from healthy financial conditions, to a robust labour market, to an anticipated jump in demand from abroad. Although rising levels of pay could have an effect on Germany's ability to compete globally, Germany is expected to maintain a significant presence in global markets. If, as the prognoses generally indicate, foreign demand goes on rising over 2014, German companies ought to be able to continue relaxing their investment caution. This will have a positive effect on the economy.[42]

There has been robust development in private consumption caused by rising employment and considerable increases in wages. This development may continue as employment is meant to further increase.

Currently the price development is in line with the price stability target of the European Central Bank, with inflation rates of 1.3 percent in 2014 and 1.8 percent in 2015. The number of employed persons is expected to increase by 260,000 persons in 2014. Since, however, the size of the potential workforce is also increasing especially due to immigration from Bulgaria and Rumania, this will not lead to significant decrease of the unemployment rate. The unemployment is meant to decline only slightly to 6.7 percent in 2014 and 2015.[43] In 2013 the public budget showed a surplus of around EUR 0.3 billion. 2014 this surplus will rise to almost EUR 3.6 billion, or 0.1 percent of GDP as the economic situation improves.[44]

41 Cf. DIW (2014), Institut für Weltwirtschaft Kiel (2013c), p. 3-5.

42 Cf. DIW (2014), p. 335, Bundesministerium für Wirtschaft und Technologie (2013b), p. 6-7.

43 Cf. DIW (2013b), p. 32.

44 Cf. ibid.

Thanks to its competitive industries, Germany can benefit from the worldwide economic developments that have been emerging for some time now. These trends include climate and environmental protection, future-oriented mobility and energy solutions, state-of-the art medical technologies and everyday goods aiming at an ageing population. German industry is well placed to handle these challenges by producing a wide range of products.[45]

Exports might be extended by a further recovery of the world economy. Exports in non-European countries have been rising rather dynamically for some time, and deliveries to the euro area will regain strength the faster Europe's economy recovers again. On the other hand, imports will also be stimulated triggered by strong domestic demand.[46] In recent years, Germany has been posting current account surpluses. Exports are strongly based on Germany's highly innovative small and medium-sized enterprises. These constitute 99.6 percent of all companies, employing almost 80 percent of all employees in Germany. Many of these SMEs are world market leaders in their respective niche segments. Together with internationally leading large companies e.g. including Bayer, BASF, Daimler, Volkswagen, Siemens they make up Germany's manufacturing industrial base.[47]

Table 2: Development of German foreign trade [48]

Foreign trade yoy change in %	2011 actual	2012 actual	2013 actual	2014 forecast	2015 forecast
Real Exports	8,0	3,2	0,8	5,9	6,2
Real Imports	7,4	1,4	0,9	6,1	7,2
Terms of trade	-2,3	-0,4	1,4	0,6	0,1
Indicator of price competitiveness	-0,9	-3,0	2,0	1,0	0,1

Germany's products continue to face a strong demand on the world markets. Offering innovative and competitive products of the highest quality, it is not surprising that, since 2000, Germany's average export quota has amounted to 35 percent. German trade figures recovered briskly from the global recession in

45 Cf. Federal Ministery of Economics and Technology (2010).
46 Cf. Rheinisch-Westfälisches Institut für Wirtschaftsforschung (2013), p. 41 ff.
47 Cf. Bundesministerium für Wirtschaft und Technologie (2013d), p. 3.
48 Based on DIW (2014), p. 366, and the definitions mentioned there.

2010 and in 2011. The export quota in 2011 climbed to a record high of more than 41 percent. Especially German produced goods from the chemical, automotive, and machinery & equipment industries are in high demand worldwide. Only China, a country with a much larger population, has higher overseas sales than Germany.[49]

As Germany is an export nation when exports are suffering, there is a remarkable impact on the German GDP. Overall, the pace of exports of 2013 lacks behind the world trade. This is due to the sluggish development of deliveries in the euro area, which are still a large part of the German exports. However, given the expected recovery of economic activities in the rest of the euro area, German exports should significantly pick up pace in 2014 and in 2015.[50]

Germany's main trading partners are European countries such as France, UK, Italy, and the Netherlands as well as international markets including the United States, China, Russia, and Japan. Approximately 71 percent of all exports are exported to European countries, of which 59 percent go to EU member states. The number two region for German exports is Asia (16 percent) followed by the USA (10 percent). This shows that Germany is heavily dependent on demand within Europe. Any weakening in European domestic demand would have wide-ranging consequences.[51]

A rising current account surplus is a sign of increasing competitiveness. In a situation of cyclical underemployment a rising export surplus is thoroughly desirable. It can boost output and employment and hence increase per capita incomes. From a long-term perspective, however, this approach could be misleading. The German example currently shows that a continuous current account surplus provokes harsh criticism from EU trade deficit countries as disequilibria in national balance of payments might endanger the common currency.

To sum it up: The previously anticipated developments might be strongly influenced by political interventions. During the German election campaign in 2013 many proposals were put forward which would bring changes to

49 Cf. Erber, G., Hagemann H. (2013), p. 15 ff.

50 Cf. DIW (2014), Projektgruppe Gemeinschaftsdiagnose (2013), p. 35-37.

51 Cf. DIW (2013a), p. 16.

economic, financial and social policy. These changes would involve both distribution issues, as well as the promotion of economic growth.[52] But since the German Bundestag elections did not yield any clear majority, the course to be pursued by the future government is not yet fully predictable.[53]

2.2 Germany's WEF Global Competitiveness Index Ranking

An economy's competitiveness cannot be reduced only to GDP and foreign trade because enterprises must also cope with political, social and cultural influences. Therefore nations need to provide a business environment consisting of structures, institutions and policies that encourage the competitiveness of enterprises. The Global Competitiveness Report (GCR) of the World Economic Forum (WEF) represents the most comprehensive study of the international competitiveness of individual countries. It uses a fairly detailed concept that in its empirical application combines data from national statistics with a survey among leading managers. The authors are continuously modifying the concept on the basis of new research results. Some of the most famous economists participate in this process.[54]

However it has to be made clear that indicators like the WEF country ranking are facing some informational limitations. Firstly, the selection of indicators is resulting from the subjective selection of the researching body. This procedure is not always derived from a consistent theoretical model. Secondly, interpretation problems can come up when direct performance indicators like the GDP are pooled with measures that merely represent potential performance drivers. Thirdly, the decision whether giving all indicators identical weights or weighting them according to their relevance is a result of the researchers bias.

Bearing this in mind, the WEF country ranking takes twelve criteria (12 pillars) into account, such as government framework conditions for the economy, the situation in the financial markets and the educational system. On the basis of surveys the competitiveness of 148 countries is evaluated. The following table

52 E.g. the pension system reform that allows under certain circumstances the retirement at the age of 63 without any reductions or the introduction of the minimum wage in Germany in 2015.

53 Cf. DIW (2013b); Cf. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (2013), p. 1.

54 Cf. Schwab, K. (2013), p. 8f.

shows the development of Germany´s competitiveness in the last five years according to the WEF Global Competitiveness Index ranking (GCI).

Table 3: WEF Global Competitiveness Index [55]

WEF Global Competitiveness Index Ranking				
2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
1. Switzerland	1. Switzerland	1. Switzerland	1. Switzerland	1. Switzerland
2. USA	2. Sweden	2. Singapore	2. Singapore	2. Singapore
3. Singapore	3. Singapore	3. Sweden	3. Finland	3. Finland
4. Sweden	4. USA	4. Finland	4. Sweden	4. Germany
5. Denmark	5. Germany	5. USA	5. Netherlands	5. USA
6. Finland	6. Japan	6. Germany	6. Germany	6. Sweden
7. Germany	7. Finland	7. Netherlands	7. USA	7. Hong Kong
8. Japan	8. Netherlands	8. Denmark	8. UK	8. Netherlands
9. Canada	9. Denmark	9. Japan	9. Hong Kong	9. Japan
10. Netherlands	10. Canada	10. UK	10. Japan	10. UK
11. Hong Kong	11. Hong Kong	11. Hong Kong	11. Qatar	11. Norway
12. Taiwan	12. UK	12. Canada	12. Denmark	12. Taiwan
13. UK	13. Taiwan	13. Taiwan	13. Taiwan	13. Qatar
14. Norway	14. Norway	14. Qatar	14. Canada	14. Canada
15. Australia	15. France	15. Belgium	15. Norway	15. Denmark

Germany´s WEF Global Competitiveness Index ranking has varied between 4 and 7 in the period from 2009 to 2013. Compared to last year's report, Germany improved its ranking in 2013 by two positions taking now fourth place behind Switzerland, Singapore and Finland. Among the top 10, there are four more countries from the European Union besides Germany. Finland leads in third position, followed by Sweden (6th), the Netherlands (8th) and Great Britain (10th).

Compared to the results of the rankings of the previous years, this does not represent a major change. To get a more detailed insight into certain features of Germany's competitiveness the 12 pillars need to be analyzed. Table 4 shows

55 Cf. Schwab, K. (2013), p. 194; Schwab, K. (2012), p. 176; Schwab, K. (2011), p. 184; Schwab, K. (2010), p. 164; Schwab, K. (2009), p. 152.

the development of Germany's ranking in the 12 pillars for the past 5 years. The placement in the majority of the pillars has remained relatively stable.

Table 4: WEF Global Competitiveness Index Ranking per Pillar [56]

Global Competitiveness Index	Rank per pillar				
	2009-10 (out of 133)	**2010-11** (out of 139)	**2011-12** (out of 142)	**2012-13** (out of 144)	**2013-14** (out of 148)
GCI	**7**	**5**	**6**	**6**	**4**
Basic requirements (20%)	**8**	**6**	**11**	**11**	**9**
1. Institutions	16	13	19	16	15
2. Infrastructure	1	2	2	3	3
3. Macroeconomic environment	30	23	30	30	27
4. Health and primary education	24	25	23	22	21
Efficiency Enhancers (50%)	**14**	**13**	**13**	**10**	**8**
5. Higher education and training	22	19	7	5	3
6. Goods market efficiency	18	21	26	21	21
7. Labour market efficiency	70	70	64	53	41
8. Financial market development	36	36	39	32	29
9. Technological readiness	12	10	14	15	14
10. Market size	5	5	5	5	5
Innovation and sophistication factors (30%)	**5**	**5**	**5**	**4**	**4**
11. Business sophistication	2	3	4	3	3
12. Innovation	7	8	7	7	4

Germany is ranked 3rd for the quality of its infrastructure, offering in particular first-rate facilities across all modes of transport. The goods market is rather efficient and can be characterized by intense local competition (sub pillar 10th) and low market dominance by large companies (sub pillar 2nd). Germany's business sector is quite sophisticated, especially when it comes to production

56 Cf. Schwab, K. (2013), p. 194; Schwab, K. (2012), p. 176; Schwab, K. (2011), p. 184; Schwab, K. (2010), p. 164; Schwab, K. (2009), p. 152.

processes and distribution channels. German companies are among the most innovative in the world, spending heavily on Research & Development (4th) and being complemented by the country's well-developed ability to absorb the latest technologies at the firm level (16th). Research institutions are assessed as being of higher quality than in previous years, and the availability of scientists and engineers appear to have risen. All these attributes allow Germany to benefit greatly from its significant market size (5th), which is based on both its large domestic market and its strong exports. Some shortcomings remain with respect to labour markets and the educational system.

Despite some improvement (from 53rd to 41st), Germany's labour market remains rigid, where a lack of flexibility in wage determination and the high cost of firing hinder job creation, particularly during business cycle downturns. To maintain Germany's competitiveness, the quality of the educational still needs to be further improved. But the country has already registered an improvement across all educational quality indicators in the GCI, an important basis for sustained innovation-led growth.[57]

The main problems of the German economy are in the areas of tax policies[58] and the labour markets. Although these are not totally new results, WEF suggest that the reforms initiated in Germany[59] in these areas may not be sufficient in the eyes of leading managers of international firms in Germany to remedy the economic problems. Rather more decisive reforms are required to secure Germany's international competitiveness and standards of living.

57 Cf. Institute for Management Development (IMD) (Ed.) (2012), p. 3.

58 Cf. International Financial Corporation & World Bank (Ed.) (2013), p. 138.

59 Cf. Bundesministerium für Wirtschaft und Technologie (BMWi) (Ed.) (2013b), p. 4-5.

2.3 Germany's competitiveness according to selected WEF factors

Based on the WEF Competitiveness Report several bolstering and impeding factors can be identified for doing business in Germany. The following analysis will focus on a selection of noticeable aspects.

2.3.1 Labour market and productivity

A labour market is defined as a market where workers and employees interact with each other. Labour markets must guarantee flexibility to ensure that labour is allocated most efficiently within the economy.[60] Labour markets should demonstrate flexibility in the field of working time, wages and also allocation and qualification of workers.[61] Rigid labour markets go along with the tendency to high unemployment rates and low labour productivity. Labour market efficiency is captured in the 7th pillar of the WEF competitiveness report. The pillar is separated into ten sub categories. Germany itself achieves a total rank in this section of 41.[62] A closer look to the sub categories shows Germany's major weakness, the flexibility of wage determination. Germany ranks here 141th out of 148 chosen countries. Furthermore, within the internationally community Germany is characterized by high labour costs in both wage labour costs and gross payments.[63] Hiring and firing practices as well as redundancy costs in Germany add up to even more unsatisfying results. However, Germany's position in pillar 7 is positively influenced by Germany's capacity to attract and retain talents and the reliance on professional management.

In order to combat the foreseeable skilled worker shortage Germany is thinking about more ways to activate female labour. Currently Germany is ranked 52nd. But public attitudes have already changed: E.g. the nominations of Angela Merkel as federal chancellor and Ursula von der Leyen as minister of defence have indicated that high rank jobs are no more a strictly male domain.

The following chart shows the detailed results of Germany in the labour market efficiency pillar.

60 Cf. Schwab, K. (2013), p. 4-5.
61 Cf. Seifert, H. (2006), p. 602.
62 Cf. Schwab, K. (2013), p. 194.
63 Cf. Federal Ministry of Economics and Technology (2010), p. 8.

Table 5: Germany's competitiveness ranking: Labour market efficiency [64]

WEF Competitiveness Ranking 7th Pillar: Labour market efficiency		
Category	**Score**	**Ranking**
7.01. Cooperation in labour employers relations	5.2	18
7.02. Flexibility of wage determination	3.3	141
7.03. Hiring and firing practices	3.3	118
7.04. Redundancy costs, weeks of salary	21.6	100
7.05. Effect of taxation on incentives to work	3.7	64
7.06. Pay and productivity	4.3	42
7.07. Reliance on professional management	5.5	19
7.08. Country capacity to retain talent	5.1	9
7.09. Country capacity to attract talent	4.7	20
7.10. Women in labour force, ratio to men	0.86	52

In Germany the labour productivity rose by 22.7 percent per labour force and by 34.8 percent per labour hour between 1991 and 2011.[65] On the other side, in the same period the labour expenses per labour force increased by 47.5 percent while labour expenses per labour hour even rose by 63.4 percent. As a consequence unit labour costs increased by about 20 percent.[66] Compared to other European countries Germany could extend its labour market competitiveness because of the Agenda 2010 reforms in 2003.[67] New flexible forms of employment, relaxation of dismissal protection and a modest real wage development strengthened Germany's relative competitiveness.

64 Adapted from: Schwab, K. (2013), p. 195.

65 Cf. Statistisches Bundesamt (2013). Labour productivity is defined as the gross domestic product per labour force or labour hour.

66 Cf. Hauf, S. (2012).

67 The Agenda 2010 was implemented by SPD chancellor Gerhard Schroeder as a national installment of the European 2010 Lissabon strategy. It contained reforms in the fields of training and education policy, business operation policies, labour market, health insurance, pension system, family policy.

2.3.2 Infrastructure

Infrastructure is the foundation of an economy that is based on the division of labour. A well developed transport and information infrastructure supports trade and thus a nation's economic wealth. From a geographic point of view Germany has advantages towards other European countries as Germany is positioned in the very centre of the Euro-zone and therefore surrounded by many neighbouring trade partners. Given a suitable infrastructure this enables Germany to serve the national and cross-border markets at low transaction costs.[68] Consequently Germany delivers more than half of its exports to European countries. Germany represents the fifth biggest trade market in the world[69]. Ensuring the mobility of goods and of people makes business operations become more profitable.

Taking a look at Germany's infrastructure competitiveness, the WEF Global Competitiveness Index indicates a third rank for Germany. Germany gained a total 6.2 out of 7 points in this category. The following table gives a detailed analysis of Germany's infrastructure competitiveness.

Table 6: Germany's competitiveness ranking: Infrastructure [70]

WEF Competitiveness Ranking 2nd Pillar: Infrastructure		
Category	**Score**	**Ranking**
2.01. Quality of overall infrastructure	6.2	10
2.02. Quality of roads	6.0	11
2.03. Quality of railroad infrastructure	5.7	7
2.04. Quality of port infrastructure	5.8	9
2.05. Quality of air transport infrastructure	6.1	8
2.06. Available airline seat km/week, millions	4633	5
2.07. Quality of electric supply	6.1	32
2.08. Mobile telephone subscription/100 pop.	131.3	39
2.09. Fixed telephone lines/100 pop.	61.8	4

68 Cf. Schwab, K., World Economic Forum (WEF) (Ed.) (2013), p. 5.
69 Cf. Schwab, K., World Economic Forum (WEF) (Ed.) (2013), p. 32.
70 Adapted from: Schwab, K. (2013), p. 195.

Nearly all categories place Germany among the top ten countries. E.g. Germany offers a broad variety of international airports. Frankfurt airport is the third biggest passenger and the biggest cargo airport in Europe.[71] Germany has a network of roads with 230.702 km length and a railroad network of 37.877 km.[72] This demonstrates a strong availability of transport opportunities. Germany is modernizing its telecommunication network with high speed cable and with new mobile transmission standards. As for energy supply there has not been a serious black-out in Germany's modern history.

However it has to be pointed out that German infrastructure is a field of further investment. The condition of German roads, tracks and bridges are partly miserable. The current power grid will not be able to handle Germany's longing for a full shift to renewable energies. The spreading of high speed internet is proceeding rather reluctantly. German reality demonstrates how difficult it is nowadays to plan and implement big infrastructure projects. Projects like Stuttgart 21, a new train station for Stuttgart, or BER, the new Berlin airport, are permanently threatened to falter because of the legal interference of interest groups.

Although Germany's infrastructure enjoys a good reputation worldwide it seems to be challenged by the future. To keep the level high it will be necessary to invest heavily into the quality of the infrastructure system and to keep innovating it.

71 Cf. Frankfurt-Interaktive (2014).

72 Cf. Statistisches Bundesamt (2013).

2.3.3 Innovation

Under the 12th pillar of the World Economic Forum Competitiveness Report Germany's performance in the field of innovation is placed 3rd out of 148 countries reaching a 5.5-out-of-7 evaluation.[73] The pillar is divided into 7 subcategories as shown in following table.

Table 7: Germany's competitiveness ranking: Innovation [74]

WEF Competitiveness Ranking 12th Pillar: Innovation		
Category	**Score**	**Ranking**
12.01. Capacity for innovation	5.6	3
12.02. Quality of scientific research institutions	5.8	6
12.03. Company spending on R&D	5.5	4
12.04. University industry collaboration in R&D	5.4	9
12.05. Gov´t procurement of advanced tech products	4.3	17
12.06. Availability of scientists and engineers	4.9	17
12.07. PCT patents, applications/million pop.	214.6	6

The innovation pillar focuses on technological innovation which is important to open a new range of possibilities for both products and services. Innovation creates comparative advantages towards other countries and reduces the necessity to import expensive foreign technologies. In 2010 Germany spent 70 bn EUR on research and development while 85,000 people were working in R&D.[75] 21 percent of all European researchers are based in Germany.[76]

Germany's companies spend heavily on R&D (4th rank worldwide). Germany is also the European patent leader with more than 13,000 patents granted in 2011. Triggered by innovation, Germany's worldwide exports of high-tech products sum up to 120 bn. EUR. In total Germany is no. 3 exporting nation worldwide only behind China and USA.[77]

73 Cf. Schwab, K. (2013), p. 194.
74 Adapted from Schwab, K. (2013), p. 195.
75 Cf. GTAI (2012), p. 9.
76 Ibid., p. 10.
77 Cf. GTAI (2012), p. 9.

Germany started several years ago a reorganisation of the university financing incentives. Special public funds were given to so-called excellence universities that demonstrated a strong ability to "produce" high quality research. At the same time there is a public discussion going on how to make a researching career in a German lab more attractive to young national and international academic high-performers. Germany's technological excellence will only be kept if German universities attract and educate enough students in the field of engineering and technological studies. In order to keep Germany's innovation performance over average and to receive a competitive advantage from that, it is therefore necessary to continuously invest in R&D, to go on reforming the university education and to urge that the basic principles of patent rights are internationally maintained.

2.3.4 Inflation

Inflation is a rise in the general level of prices. Inflation makes money lose its value. As high inflation rates have been proved to be counterproductive for a nation's growth perspectives, modern central banking aims at keeping inflation rates low and avoiding deflation at the same time. The following chart shows the inflation in Germany in the course of the last decades.

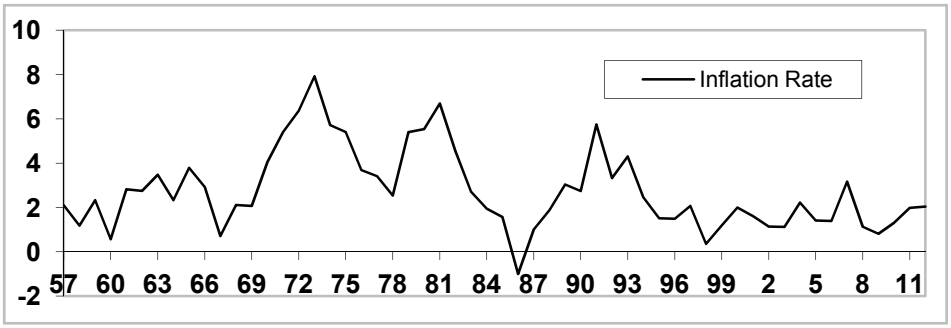

Figure 2: German inflation rates (in %) from 1957-2012 [78]

Obviously inflation rates in Germany had their peaks in the seventies, beginning of the eighties and the beginning of the nineties with a historical high of nearly 8.0 percent in the year 1973. This historical high was a direct consequence of the OPEC1 crisis. Deflation was measured in the years 1958, 1986 and in the

78 Data from: Inflation.eu (2014).

year 2009. The most recent deflation was due to the consequences of the 2007 financial crisis.

Since the mid nineties the inflation rate in Germany has been kept stable on an average of almost 2 percent. Currently inflation rates are going down in Germany. 2013 Germany's average inflation rate came down to 1.43 percent and 2014 it is 1.24 percent until now.[79] Without putting too much weight on the European government debt crisis, this low inflation rate is a consequence of the monetary policy of the European Central Bank (ECB). The paramount target of the ECB is to keep inflation under but close to 2 percent and it can be noticed that the ECB was operating quite successfully.

A stable macroeconomic environment is important for the growth perspectives of a country.[80] As part of the WEF third pillar the inflation rate strongly influences the macroeconomic environment indicator. Germany receives here a maximum 7 score together with forty other countries as the inflation ranges between 0.5 and 2.9 percent[81].

Currently the Eurozone is struggling with the consequences of the European government debt crisis (Euro crisis). As a consequence the ECB switched to a heavily expansionary monetary policy for some time now. In order to safeguard a low inflation environment it is necessary that the ECB manages to find the right point of time to exit the current policy or to risk a significantly rising inflation rate in the Eurozone and thus in Germany.

2.4 Germany's competitiveness according to the business community

The competitiveness of a country and its limitations can also be judged by the business community itself. Therefore the WEF is collecting data on the extent of approval of survey respondents to the question if certain business restricting factors are relevant in a country. The respondents are asked to classify the top 5 factors. Finally the responses are weighted according to their rankings. The following chart shows the result of the survey:

79 Cf. inflation.eu (2014), Fielitz, U. (2013).

80 Cf. Schwab, K.(2013), p. 6.

81 Germany shares this top rating together with forty other countries as their inflation rates all range between 0.5 and 2.9 percent. Cf. Schwab, K. (2013), p. 444.

Table 8: Problematic factors for doing business - Germany [82]

Problematic factors for doing business Relevance according to German respondents	
Category	**Score (in percent)**
Tax Regulations	19.0%
Restrictive labour regulations	15.6%
Tax Rates	12.7%
Inefficient government bureaucracy	10.4%
Access to financing	9.9%
Inadequately educated workforce	8.9%
Insufficient capacity to innovate	5.2%
Policy instability	5.2%
Poor work ethic in national labour force	4.5%
Inadequate supply of infrastructure	2.7%
Corruption	1.7%
Inflation	1.2%
Foreign Currency regulations	1.0%
Crime and theft	0.8%
Government instability/coups	0.7%
Poor public health	0.5%

The biggest concern is about the German tax regulations. Germany is the country with one of the most complicated tax laws. German textbooks on its tax system represent more than fifty percent of the worldwide literature on tax issues. Companies have to employ a team of tax consultants and accounting specialists in order to fulfil tax requirements and to optimize their financial position. Furthermore small and medium sized companies complain about relatively high tax rates and a competitive disadvantage towards big companies in facilitating their tax burden.

German labour law is considered as being very complex. Detailed and complex regulations e.g. on labour contracts, redundancy agreements, notices of

82 Adapted from Schwab, K. (2013), p. 195.

cancellation of work, fixed-term- and part-time-contracts, dismissals with the option of altered conditions of employment, relocations, maternity protection, parental leave, warning letters, certificates of employment cause significant irritation and concern both on the employer and on the employee side.

Another point of concern is represented by the elevated tax rates in Germany. The German Ministry of Finance compared the tax burden of capital companies in different countries: Germany's position is here only located in the bottom third.[83]

Furthermore the company's complain about the inefficient government bureaucracy. Germany is characterized by complicated procedures and forms to fill in in order to start operating a business. Additionally, permanent processes of declaration and documentation reduce the attractiveness of becoming entrepreneurially active in Germany.

Small and medium sized enterprises that build the foundation of the German economy point out that they partly have problems in funding the start-up-period and their operations. However these problems have already been perceived by the German government. Under the national reform programme 2005-2008 and 2008-2010 the German government has already installed several new financing mechanisms for SME like the new "small loan programme", special interest rates and programmes to promote venture capital in order to support innovation.[84]

Germany is often referred to as a country with a demographic problem. The decreasing number of infants might lead to a future lack of labour supply. Even nowadays companies already complain about a lack of skilled labour and also about an attitude problem of young employees that consists of a lack of diligence, ambition and devotion. A look into the results of the 5th pillar, higher education and training, might give another impression as Germany is ranked 3rd out of 148 countries. Furthermore Germany is ranked 2nd in the availability of research and training services and ranked 10th in the extent to staff training.[85] But the quality of the educational system (14th rank) and especially the math and science skills of German pupils is considered as not being satisfying for an

83 Vgl. BMF (2014), p. 20.
84 Vgl. European Commission (2014).
85 Cf. Schwab, K. (2013), p. 32.

industrial nation like Germany. Based on this criticism Germany has started some reforms within the education system. The most recent results of the PISA study, a worldwide comparative survey on school performance, show that Germany has improved its school system within the last years as Germany got results in all categories above the OECD average.[86] Especially in mathematics Germany was one of only three countries that improved in this category since the last survey in 2003. But the study also shows that there are enormous differences between girls and boys in several categories. The big performance differences result from the differentiation in Germany's secondary school system.[87] Furthermore the PISA study stresses that the discipline of pupils has deteriorated.

86 Cf. OECD (2013b), p. 1.
87 Cf. OECD (2013b), p. 5.

3 Policy recommendations

The recent financial crisis has proven once again the damaging impact on living standards that can result from macroeconomic instability. Large swings in economic activity, unsustainable debt levels, and volatility in foreign exchange markets and in financial market prices can contribute to job losses and increase poverty. Maintaining macroeconomic stability therefore is a prerequisite for a wealth oriented development. The broad objective of macroeconomic policy is to contribute to economic and social well-being in an equitable and sustainable manner. Because unemployment and underemployment are the main causes of poverty, a critical task is to maintain the economy as close as possible to full employment.

Economic growth is not only a precondition for high rates of employment, but does also provide countries the fiscal freedom to invest into future growth by spending money on infrastructure, education and research and development.

The major issue that endangers Germany's macroeconomic stability is the European debt crisis. Certainly Germany is among the countries that are better off. However it is plain to see that a community of independent states cannot integrate if the economic performances and competitiveness differ significantly. Therefore it has to be the main target of German politics to convince other Eurozone countries to go on reforming and flexibilizing their economies. At the same time stricter sanction mechanisms for public households have to be implemented in order to avoid the over-indebtness of participating countries. Germany's wealth is also a consequence of the common European currency. Therefore it is in Germany's interest to put much effort into stabilising the euro. This might mean on the long run that a common monetary policy in the EMU will have to be accompanied by a common fiscal policy and that the ECB has to remain independent in following its target, guaranteeing price level stability.

Germany's education system needs to encounter more reforms. The foreseeable lack of skilled labour has to be met already on the first level of education, the kindergarten. Kindergartens have to be clearly instructed to fulfil their education task. Correspondingly the kindergartens need better educated staff. All parents should be obliged to send their children to the kindergarten at the age of three in order to make sure that the basis qualification of children is not a question of the education level or of the origin of the parents. Currently too

many children enter the school system with significant deficits in German language skills and general knowledge. As a consequence Germany shows a strong correlation between the social background of a child and its future professional career path.

European experience has shown that extending elementary school to six years facilitates the change between elementary and secondary school for the pupils and gives the young children more time to develop as they do not face the pressure of qualifying for a certain secondary school too soon.

Germany has to continue investing heavily into education:[88] As the education of the children will be the bottleneck of Germany's future growth perspectives, the learning environment of the children has to be improved. This includes e.g. curricula that address German deficits in mathematics and sciences, the academic and social quality of teachers, lunch facilities at school, sanitary facilities in working order or reasonable leisure time activities within the all-day-schools.

German universities have to go on focussing more on the demand of the labour market. It is easy to understand that there is a serious mismatch between the number of university students and the demand for future scientist or researchers. Universities have to bear in mind that most students want to enter working life after graduation. Therefore the curricula should take the employability into account. Unfortunately this step has already only been taken by some universities that offer a combination of academic education and practice applications.

A better education will contribute to the solution of the demographic problem as it will increase the productivity of labour[89]. Currently Germany supports the introduction of minimum wages. The imperfections of the labour market have created some seriously low income employments that hindered people from making a living. In order to heal these imperfections and to avoid too much

88 In 2011 the Federal Republic of Germany spent more than 6.9 percent of the GDP for education. This amounts to 178.1 billion euro. Cf. Statistisches Bundesamt (2013), p. 6. These spendings include measure to increase employability and to re-educate unemployed people.

89 The labour productivity is defined as real GDP divided by the hours of labour used to produce them.

pressure from labour supply from Eastern Europe minimum wages can represent an effective measure as long as they are not set on a too high level. Companies that still complain about minimum wages can be countered that the decision to supply a well-established German social market economy also means to take over responsibility for the well-being of both the consumer and the staff.

Although bearing the previous in mind, the overall strategy has to aim at an increased flexibility of the labour market. The German Agenda 2010 has liberalized the labour market significantly and this played an important role for Germany's positive economic development. Therefore the current development to partly "turn back the clock" is very dangerous. New regulations e.g. like early retirement, extra maternal pensions are costly and cannot be financed as the current surplus in the public pension funds will be needed in a few years when the German "baby-boomer" generation retires.

Germany has to invest much more into infrastructure. The transport network is in a decreasing condition, the tarmac on motorways is battered, train tracks are deficient, and bridges are seriously damaged. The German government has announced that it will address this issue although the intended investment might not be enough.

Germany's telecommunication and information infrastructure needs heavy investment, too. The nationwide build-out of high speed internet and telecommunication is rather slow. A similar observation is given as for the development of new transport facilities. E.g. building new underground systems, train stations or airports takes several years up to a decade from planning to opening. Asian countries like China might be a good example here how to speed up the process and how to realize an obvious growth potential.

Germany has to extend its support for research and development. As Germany's economy is not based on raw materials but on knowledge, it is essential to strengthen the innovation potential. Germany is depending on the export of high technology products. Hence the comparative advantage of the German economy can only be kept with a continuous cycle of innovation. The German government has introduced a special funding programme for universities that produce an excellent research output. However it seems that these programmes are too unspecific. As a consequence the financial support

and incentive for innovative research is still too low. Extra funds should also be channelled to the support of small and medium sized enterprises. German history proved that these companies are the innovation leaders for applications that can directly be marketed.

Last but not least Germany has to reflect about the tax system. Although there is a long tradition of complex tax regulations and several lobby groups that benefit from such a system, introducing a lean tax system would be a major step into making the German economy more competitive. Following the ideas of US economist Arthur Laffer, an accompanying further cut down in tax rates might increase tax revenues by prompting entrepreneurship and increasing employment. Furthermore Germany has to put much effort into international tax agreements in order to make sure that companies that sell their products on the German market also pay taxes in Germany.

These policy recommendations are certainly only an extract of an agenda for “Germany 2020”. In general it can be said that within democratic systems the necessity for majorities might sometimes delay economically reasonable reforms from being realised. However history has also shown that enduring periods of economic weakening increase the general acceptance for these reforms.

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Part 4 Managing Competitiveness

K The analysis and integration on cotton industry chain of Shandong Province[1]

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Abstract

Based on the view of industry chain analysis, this article describes present situation of cotton industry chain structure of Shandong province, analyses market players behavior characteristics of each node along industrial chain, reveals main problems of cotton industry chain management, then puts forward corresponding countermeasures of industrial chain integration. The research shows that, cotton industry chain is relatively long, there are many internal nodes and the relevance among nodes is strong. The integration of cotton industry chain has large space, also needs more measures to do guarantee, such as implementing effective control of strategic resources in vertical direction, increasing effective width of industry chain in horizontal direction.

Keywords

Shandong, cotton industry, supply chain management, industrial chain integration

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1 Problem introduction

Cotton is the most important economic crop for Chinese agriculture as a special agricultural product, whose commercialization rate is 95%. Chinese cotton industry involves 300 million farmers and 10 million economic interests of textile professionals and related industry professionals. China is the largest producer of cotton, whose cotton acreage accounted for 15% of world cotton acreage in 2009, cotton production accounted for 26% of world cotton production. Meanwhile, China is also the largest consumer of cotton, in 2009 whose total consumption of cotton is 10.342 million tons, accounting for 40.8% of total world consumption of cotton (USDA, 2010). But in recent years, the comparative interests of Chinese cotton farmers declined, with price fluctuations of international cotton market and domestic cotton market, leading domestic cotton acreage to reduce, and about 20% domestic cotton consumption dependent on imports.Shandong province is a major agricultural province in China, also cotton producing area. In 2011 year, cotton acreage in Shandong province accounted for 14.9% of national cotton acreage, but crop acreage in Shandong province accounted for only 6.7 percent of national crop acreage, cotton production accounted for 11.9% of national output; meanwhile, national cotton crop sowing acreage accounting 3.1% of national crop acreage, Shandong cotton acreage crop acreage accounted for 6.9% Shandong crop acreage. Specific data are shown in Table 1.

Although cotton production in Shandong province is high, not high for cotton yield per unit. In 2011, Shandong cotton yield per unit area is 1043 kg/ha, ranking No.17 nationwide, only half of Shanghai cotton yield per unit (the highest level in China). The soil, climate and other natural conditions can explain the difference relatively, but there are other reasons, such as technical differences in cotton cultivation phase. Specific data are shown in Table 2.

Table 1: Proportion of cotton production in Shandong province to China (2011)

national crop area (ha)	162283200		
national cotton area (ha)	5037805	Ratio of national cotton area to crop area	3.1%
Shandong crop area (ha)	10865438	Ratio of Shandong crop area to national crop area	6.7%
Shandong cotton area (ha)	752600	Ratio of Shandong cotton area to national cotton area	14.9%
		Ratio of Shandong cotton area to Shandong crop area	6.9%
national cotton production (tons)	6588959		
Shandong cotton production (tons)	784586	Ratio of cotton production Shandong to national	11.9%

Source: "China Statistical Yearbook 2011." and "China Statistical Yearbook 2012."

Table 2: Cotton yield data of China's major cotton-producing regions (2011, unit: kg / ha)

Region	**Yield data**	**region**	**Yield data**	**region**	**Yield data**
National	1308	Ganshu	1585	Anhui	1079
shanghai	**1940**	Zhejiang	1489	Hubei	1076
Liaoning	1822	Heimeng	1447	**Shandong**	**1043**
Jilin	1812	Shanxi	1341	Hebei	1033
Xinjiang	1769	Tianjin	1204	Jiangshu	1032
Jiangxi	1743	Jiangxi	1188	Guangxi	974
Yunan	1648	Hunan	1180	Henan	964
Beijing	1170	Sichuan	913	Fujian	697

Source: "China Statistical Yearbook 2012."

The cotton production in Shandong province changed greatly in recent years. Cotton production rose from 590,000 tons of 2000 year, gto 1.098 million tons of 2004 year radually, which is the maximum so far. In the following years, the

data reduced in some year, raised in other year, and there is no certain rule. The overall trend is decreasing year by year, down to 785,000 tons in 2011. The changing degree in decade is as much as 100%, and the changing degree of adjacent year is up to 30%. Specific data are shown in Table 3. At the same time it can be shown that the cotton yield per unit of Shandong changed in large scale, the maximum reaching 1,172 kg/ha in 2008, the lowest was 945 kg/ha in 2010.

Table 3: Shandong total cotton production and yield data per unit in recent years

year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
total production (10000 tons)	59	78.1	72.2	87.7	109.8	84.6	102.3	100.1	104.1	92.1	72.4	78.5
yield (kg/ha)	1085	1062	1086	994	1036	1000	1149	1112	1172	1151	945	1043

Source: "China Statistical Yearbook 2012."

Compared with other cotton-producing regions, cotton production acreage, cotton production in Shandong are in dominant position, but technology level and yield per unit area are at disadvantage position, and there are many questions in Shandong cotton industry, such as the quality is not high, the income of cotton farmers is not high, and so on. Under the limitation of objective conditions of arable land resources and irrigation water resources increasingly scarce, it is not realistic to achieve the aim of increasing the total production, simply by expanding cotton acreage, or by increasing yield per unit through technological breakthroughs in a short time. The development of cotton industry needs other measures.

Industry chain theory has been successfully applied in other industries. Applying industry chain theory to analyze cotton industry development issues appeared in Shandong province is a reasonable choice, then put forward cotton industry policies and industry organization mode, to increase performance of cotton industry through industry integration.

2 Current situation analysis on cotton industry chain in Shandong Province

Agricultural industry chain is the concrete manifestation of industrial chain in agriculture. Zhang Li Xiang and Zhang Xi Cai (2007) thought that "agricultural industry chain is the network structure of industry groups closely related to agricultural commodities supply and agricultural commodities demand, including agricultural scientific research, agricultural material production and other pre-preparation sectors; crops cultivation, livestock breeding and other intermediate sectors; as well as agricultural commodity processing, storage, transportation, sales and other post- industrial sector. "

After development of 60 years, cotton industry in Shandong Province has formed a relatively complete industrial chain. From supply of cotton seeds, pesticides, fertilizers and other agricultural material, to cultivation of cotton, to cotton ginning, spinning and textiles, to cotton import and export of, all aspects have strict division of labor and chronological order. Economic players in same industry stage have different resources in different regions, distributing geographically in reasonable way based on the spatial characteristics. The cotton industry chain of Shandong Province is shown in Figure 1, including entity units along cotton production chain, and government service deparments, such as agriculture scientific research, weather warning, technical training and promotion, information exchange and other public goods.

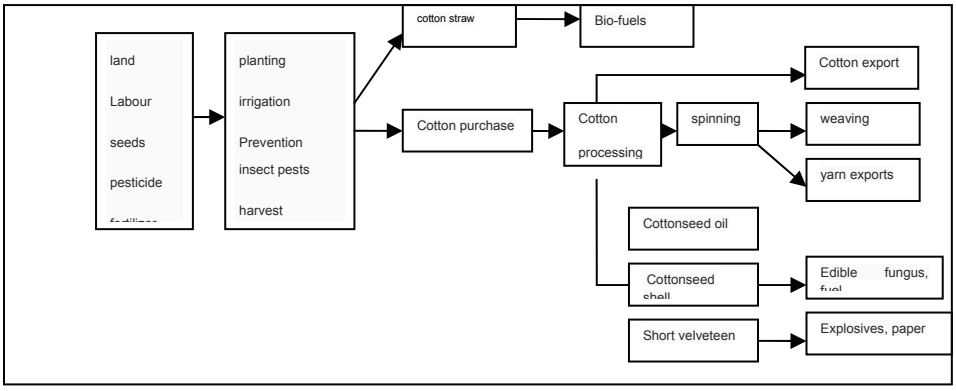

Figure 1: Cotton industry chain of Shandong Province

2.1 Analysis on cotton-planting phase

The cotton industry chain is the longest one among all agricultural chains, and has a wider width. The whole industry chain contains more phases, and cotton planting is the core part, which not only affects upstream and downstream sectors, but also has significant impact on smoothing performance of whole industry chain. Analysis of cotton industry chain, should start from cotton-planting part and from link to upstream sectors and link to downstream sectors.

There are almost no large-scale cotton producers in Shandong province. Cotton cultivation activities are undertaken by scattered small farmers. The farmland scale of Shandong Province is 1.03 hundred million MU[5]s, the number of farmers is 2.07 ten millions, so the average arable land per household operating is about 4.97 MU. These scattered small scale farmers are potential to cotton plant. They plant cotton this year but may not next year; the cotton acreage of specific farmer can also not be determined, because they possibly reduce cotton planting scale and possibly increase scale of cotton planting.

When farmers are facing cotton planting decision problem, economic factors are main considerations. Most of farmers in producing regions of Shandong province abandoned cotton cultivation in recent years, which can easily be seen from the significant decrease of cotton cultivation acreage. Because farmers are rational economic actors, it is easily concluded from farmers' behaviors that benefits from planting cotton is less than benefits from planting other agriculture products.

Average yield of wheat or corn can reach more than 1000 kg\MU, price corn of is about 2 Yuan per kilogram, so the revenue of planting corn in one MU land is about 2000 RMB; Average yield of cotton is about 500 kg\MU, average price is about 4 Yuan/kg, so the revenue from planting cotton is almost no different to the revenue from planting corn. But things are more complicated than shown from surface.

Mechanization has not been realized along cotton producing process in Shandong. Farmers have to hire a lot of workers in cotton seed cultivation activities and harvesting activities, and average cost for hiring workers can reach 800 yuan/mu. But the agriculture activities for planting corns have

5 MU is basic land measure for agriculture in China, one MU is about 666 square meters

realized mechanization, which can reduce agriculture operation cost to 200 yuan/mu. Once more, because cotton cultivation requires frequent and complex field management, farmers are trapped in the cotton fields all year round; they have no time and opportunities to go cities to earn labor wge from working in other industry, such as in contracture industry, where they can easily earn 3000 Yuan per month. If farmers plant corn in their lands, they have the opportunities to leave their lands to work in other industry at least 6 months per year. From the above analysis, we can conclude that the benefit from cotton planting is less than the benefits from corn planting.

In this situation, it is easily understood why farmers abandon cotton planting, which is rational economic behavior. The experts from National Cotton Market Monitoring System have forecasted that, national cotton planting area would decline continuously unless China goverment adopt strong policies in cotton industry. The trend will be intensified in Shandong province, because farmers can find more working opportunities in other industries because of relatively developed local economy.

2.2 Analysis on the relationship between cotton-planting phase and upstream of cotton industry chain

Upstream of cotton industry chain provides agricultural materials needed for cotton production, such as seeds, land, fertilizer, pesticides, mulch, production tools, and specialized services, such as farming, irrigation, spraying pesticides. These materials and services are important to performance of cotton planting, and farmers can buy them from various providers freely and independently. The relationship between cotton farmers and providers is single trade-off relationship, but providers can bargain more from farmers taking advantage of their stronger market position, because in Chinese market, providers are organized and farmers are scattered. The increase of cost of production will reduce economic benefits of farmers, reduce enthusiasm of farmers producing cotton, thereby reduce cotton acreage, in the end, and reduce the performance of cotton industry.

Cost is one problem, the other problem is quality of these materials, which can effect the performance of cotton industry in the same way. Cotton farmers purchase seeds, fertilizer, pesticides and professional services from providers in market, but these farmers are scattered and small-scale; they have no ability and sufficient information to recognize the quality of the goods and services, which needs special and professional skills. The providers are organized

companies, so they have abilities and sufficient information to know the quality information about the goods and services, but do not want farmers know these information, because companies would make more money from farmers making use of information asymmetry。

Let's take cotton seed as an example. Obviously, the quality of cotton seed are important for cotton planting. When farmers prepare to buy cotton seeds, they generally obey local agricultural government' recommendations or observe behaviors of neighbors. The reasons include following aspects: first, cotton yield and quality are affected by weather, pests and other natural factors, good seeds previously performed well this year may be underperforming even failure in following years; second, almost all cotton seeds are transgenic now, which are commonly known as "suicide seeds "(in first year plantation, the seed can get pretty good agricultural harvest, but the fruit can not be re-planting, even if replanting can not get similar harvest to first year). More exaggerated, seed companies will use "bundling" strategy as marketing tool: bundling seeds and herbicides and pesticides. If farmer uses one company's cotton seed, the farmer must use herbicides and pesticides from the same company, otherwise, the performance of seed and the performance of herbicides will be awful. The results are very good for seed companies but are very bad for cotton farmers.

2.3 Analysis on relationship between cotton planting phase and downstream sector

Cotton planted in Shandong province is not like the cotton planted in the United States or Xinjiang region of China, where the cotton can be finished harvest only one time. In Shandong province, cotton has to be harvest 3 to 5 times, because of the local weather. During Cotton boll opening period time, there will be several rains of frog. For some early maturity if not picked immediately before rain or frog, the cotton will become yellow from white. Quality of yellow cotton is lower than white cotton. Meanwhile, cotton farmer's family does not have right condition to store cotton for long time. If stored in unsafe conditions, the color of cotton will become yellow, too. Cotton farmers would sell their cotton harvested from cotton field immediately, resulting in the quantity sold each time is small. Small trading quantity makes cotton farmer lose bargaining power, so they are only market price taker.

In fact, cotton buyers are some street vendors, who buy farmers' cotton besides cotton field or at farmers' doorstep. After on-site quanlity evaluating only by hands, both trade players reach mutually satisfactory in terms of price, and the

transaction is completed. Some problems exist in such transaction process: there can be no strict classification only by naked eyes of buyers or farmers; buyer mixes all cotton bought from various farmers, whose cotton are different in species and in quality. These problems result in bad end: to safeguard their own interests, buyers lower cotton price intentionally, and farmers have deliberately adulterated behaviors. Street vendor then sell cotton to cotton processing enterprises downstream along industry chain. The price companies paid to street vendors are affected by many factors, such as ajustment of cotton market, climate changes, substitution affections of chemical fiber, and so on. Accordingly, the price of cotton fluctuates frequently in large scope.

Price fluctuation will effect benefits of cotton farmers. Because of natural characteristics of cotton planting (takeing long time from April to September). Once farmers make planting decisions it is difficult to change in the middle of planting process. No matter the price becomes up or down, cotton farmers have to continue the process, otherwise they will take a big lose. Cotton price formation mechanism and price transmission mechanism is very complicated so that accurate forecast is not easy. But one thing is assure that price changing degree of cotton is larger than price changing degree of corn in China. No body likes uncertainty, so the enthusiasm of planting cotton decreases because of price fluctuation.

3 Problems of cotton industry chain in Shandong Province

While the cotton industry of Shandong Province has formed a complete industrial chain, some problems occurred in operation, which have an adverse effect on industry performance, so that the efficiency of cotton industry in Shandong Province is not high. Cotton industry chain of Shandong Province is only one part of international cotton industry chain, and the most profitable market sectors with high added value are occupied by other countries and regions. Shandong province can only be regarded as big cotton region, not strong cotton region. Many reasons for this situation is mainly embodied in the following aspects.

3.1 Problems occurring in cotton planting section

Water Household contract responsibility system is China's agricultural basic operating system, under this system farmer is main unit of agricultural production. Shandong cotton planting is mainly undertaken by scattered farmers. The main feature of Chinese farmer is small-scale, resulting in that it is difficult to achieve economies of scale, to develop and promote technology, to negotiate with upstream and downstream sectors in transaction process. The second feature is that, tens of millions of rural households make decision on cotton planting independently, so planting acreage is not stable and breed of cotton is not uniform.

Decentralized operation in cotton planting section have adverse affection: cotton acreage and cotton production is unstable, breed of seed are various and cotton are chaotic mixture of all level of quality; product structure is irrational, only able to low-end cotton yarn spinning. Cotton spinning enterprises need consistency of quality and stable supply of raw material cotton, so the performance of cotton planting cannot match the requirement of downstream section.

3.2 Problems of cotton processing section

The downstream of cotton industry chain lacks high-end cotton products, so there is great space of extension for Shandong province cotton industry chain. The local spinning enterprises, weaving enterprises and garment enterprises are at the low end of international industry chain, consuming cotton to produce primary products, and selling their products to international markets, with the largest investment in the whole industry chain , the lowest income , the highest risk of operation.

On the other hand, cotton processing and the following section is just one branch of cotton industry chain, there are other industry chain branches, such as cotton linter processing, mushroom cultivation, cotton seed oil and so on. These industries branches have broad market prospects, but these businesses are not well developed in Shandong province, so the industrial chain needs further widened.

3.3 Problems in the relationship between sections of industry chain

Cotton industry chain in Shandong Province is just a mechanical chain, along which the relationship among sections are pure trading relations, from agriculture material supply, cotton planting, cotton products to various production processes. All partners take various appropriate behaviors in order to maximize their own economic interests, lacking of organic links. When some problem occurring in a specific section, no matter it is cost pressures or market demand pressures, the specific section hopes to pass the problem to upstream or downstream of cotton industry, leading price fluctuation and supply fluctuation. Further more, coupled with irrational behavior of economic entities and amplification effect of transfer process, industry fluctuations may reach dangerous levels. Although there have been industry's leading companies to organize the industry chain, something are not well as expected in terms of profit allocation and risk sharing. Leading companies often use market dominant position to grab most of profits, while leaving risk to farmers and other cooperative units. Scholar Li Changping (2008) wrote that "it is very dangerous to put the hope of helping farmers on for-profit companies."

In terms of horizontal cooperation, players in the same section of industry chain still have not built close alliance in information sharing, staff training, joint procurement, and technology development, etc.. they even have not formed alliance to compete unanimously with rivals from domestic market and international market. There is only price competition among rivals from local market at lower level, which can not improve the performance of cotton industry chain and waste resources. Taking cotton planting section as instance, during industrialization of agriculture, a large number of cotton cooperative economic organizations have been built. These organizations have some organizational system advantages: can combine weak farmers together to resist market risk; can accumulate public assets to withstand natural risks; can trade with upstream and downstream with more bargaining power, and so on. But this form of organization has been criticized by economists recently, for the reasons

as following: vague definition of property rights breed "free rider" behavior; managers of cooperative economic organizations might cheat farmers taking advantage of management position. Other factors such as capital, human resource especially technicians and managers, free leave and entry for organization members, restrict development of cooperative economic organization.

4 Suggestions for integration of cotton industry chain in Shandong Province

In current economic world competition among enterprises has evolved into competition among industrial chains, because individual enterprise can not face complex competitive situation alone. Internal coordination chain fit is the basis to enhance overall competitiveness of industry chain, and effective operation of industrial chain is directly related to competitive strength of individual enterprise. The key to improve the performance of cotton industry in Shandong Province to change the previous management model of decentralized governance on every section of industry chain, to establish management model based on industrial chain management.

4.1 Establishment cotton industry chain management

The main purpose of agricultural chain management is to improve stability of industry chain, including production stability and price stability, so that even if external natural environment and market environment change the industry chain can be operated efficiently and stability. The uncertainties of cotton industry chain come from natural factors such as climate, pests, soil conditions and others, and socio-economic factors such as changes of cotton policies, changes of textile industry, changes of domestic market and international trade conditions. The key point of cotton industry chain management is to resist intrusion of controllable factors and uncontrollable factors, which needs cooperation of all sections along industry chain to build mechanism of risk partaking.

The second question is to build mechanism of benefit sharing. Economic entities of each node along industry chain are cooperative game relationship. They are independent economic entities, not willing to sacrifice their own interests to maximize the benefit of industry chain that will be shared by all players. Hu Jilian and Wang Xiaoying (2006) conducted study on conflicts of agricultural organizations actors applying game theory, describing the model how individual rationality achieve collective decision-making. Unbalance of benefit sharing is caused by information asymmetry and unequal market position of cotton enterprises, so it is required a corresponding mechanism to regulate and restrain behavior of enterprises, instructing enterprises to establish "chain overall effectiveness priority” philosophy, to abandon the narrow interest concept of only paying attention to individual enterprise.

4.2 Vertical integration in cotton industry chain

Core business leads vertical integration of industry chain, which put key sectors, leading sectors and supporting sectors together, to organize and integrate strategic resources through technical and economic measures. To achieve resources control and optimization of whole industry chain, it is necessary to identify key sectors and leading sectors according importance in the whole chain and value created.

Along Shandong cotton industry chain, cotton planting activities are at the center section, which has a significant impact on performance of cotton industry. Shandong cotton planting section is formed by a large number of family -run farmers. The main feature of cotton farmers is small scale and scattered, which have weak economic strength and technological capabilities. So though cotton farmers are at the central position, they can not undertake the responsibility as leading sector of industry chain. Cooperative economic organization can not undertake the responsibility as well, because of reasons discussed above. It requires further study which sector serves the dominant position of cotton industry chain vertical integration and how to integrate cotton industry chain.

4.3 Horizontal integration in cotton industry chain

Horizontal integration of industry chain is to increase width of industrial chain, namely, to expand the scale of industrial chain node sectors, and enhance core business competitive strength. Along modern agricultural industrial chain, the abilities of different sections are not balanced, some section such as cotton planting are weak, some section such as cotton processing are strong. The key point of horizontal integration of modern agricultural industrial chain refers to expansion of weak section, to achieve balance of all sections, to ensure the stability of industry chain development.

As for cotton planting section, because individual farmers are difficult to achieve economies of scale and to develop advanced technology, they are in disadvantaged position when dealing with the upstream and downstream sectors. On one hand, farmers can increase own their economic strength through specialization; on the other hand, scattered farmers can be mustered into economic cooperation organization. Through that, the fitted market force that matching agricultural material suppliers and cotton processing enterprise can come forth.

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Part 4 Managing Competitiveness

L Logistics workforce and demographic change in Germany

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Abstract

The objective of this contribution is to investigate the impact of the demographic change on the logistics industry in Germany. In order to explore this with a better understanding of the impacts of demographic change on the overall competence situation in Germany, a simulation based on a competence survey from 2012 with 1,068 logistics employees is conducted. This shows the effects of aging working-age cohorts on the competence distribution in the German logistics workforce – but quite huge impacts on the total available knowledge pool mainly due to the decrease of available people within the total workforce. Furthermore we use the Industry Qualification Framework (IQF) Logistics as an instrument to mitigate the ensuing lack of employability in the German logistics industry.

Keywords

Demographic Chance, Logistics Workforce, Berufswertigkeit, IQF Logistics

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1 Introduction: Logistics Workforce

In 2011, 2.8 Mio. persons are employed in the German logistics field. 29% work in the transport field, 7% are responsible for administration, 47% handle the goods in warehouses and load cargo, 17% are dealing with indirect activities such as consultant or lawyer or insurance.[2] Totally, the logistics industry in Germany has 654,606 employees as office member and 1,988,322 employees are blue collar worker such as driver or warehouse staff.[3]

2 Cp. Kille, C. and Schwemmer, M. (2012), pp. 38

3 Cp. Klaus, P., Hartmann, E. and Kille, H. (2010), p. 57

***Table 1**:* Employees in the logistics industry

	no.	occupation group	number SVP employees 2009	fraction logistics in percent of column 3	number SVP employees in logistics (column 3 * column 4)	fraction in % of all SVP employees	extrapolation to all employees (1,2 * SVP employees)	factor for extrapolation of indirect	entire logistic employees	service provider	industry and trade	other economic sectors	service provider	industry and trade	other economic sectors
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	**direct logistic occupations**														
2	71 1	engine driver	35,372	20%	7,074	0.03 %	8,489		8,489	89 %	4%	7%	7,581	329	579
3	71 2	traffic controller (rail)	53,590	20%	10,718	0.04 %	12,862		12,862	75 %	3%	22 %	9,612	400	2.850
4	71 3	other traffic controller	15,584	20%	3,117	0.01 %	3,740		3,740	42 %	17 %	42 %	1,560	621	1,560
5	71 4	motor vehicle drivers	766,37 8	80%	613,10 2	2.25 %	735,72 3		735,723	60 %	20 %	19 %	443,46 8	150,240	142,01 5
6	72 1	nautical	7,395	20%	1,479	0.01 %	1,775		1,775	73 %	5%	22 %	1,292	92	391
7	72 2	technical ship´s officer	5,914	20%	1,183	0.00 %	1,419		1,419	51 %	20 %	29 %	725	289	405
8	72 3	sailor	8,599	20%	1,720	0.01 %	2,064		2,064	75 %	2%	23 %	1,546	38	480
9	72 4	inland sailor	5,939	70%	4,157	0.02 %	4,989		4,989	65 %	4%	30 %	3,251	217	1,521
10	72 6	aviation occupations	26,349	15%	3,952	0.01 %	4,743		4,743	85 %	3%	12 %	4,011	147	585
11	**subtotal transport and traffic**								**775,803**	**61 %**	**20 %**	**19 %**	**473,04 5**	**152,373**	**150,38 6**
12	52 1	quality inspector	120,64 7	20%	24,129	0.09 %	28,955		28,955	8%	77 %	15 %	2,285	22,263	4,408
13	52 2	dispatcher	228,25 5	80%	182,60 4	0.67 %	219,12 5		219,125	7%	77 %	16 %	14,961	168,262	35,902
14	74 1	storage managers	254,63 4	100 %	254,63 4	0.93 %	305,56 1		305,561	12 %	72 %	16 %	36,725	219,968	48,868
15	74 2	Forklift truck and other equipment	55,076	80%	44,061	0.16 %	52,873		52,873	16 %	59 %	24 %	8,570	31,437	12,866
16	74 3	furniture remover	11,241	100 %	11,241	0.04 %	13,489		13,489	73 %	13 %	14 %	9,858	1,796	1,835
17	74 4	warehouse and transportworke r	493,76 3	100 %	493,76 3	1.81 %	592,51 6		592,516	27 %	49 %	24 %	157,17 7	291,250	144,08 9
18	**subtotal storation and turnover**								**1,212.51 9**	**19 %**	**61 %**	**20 %**	**229,57 6**	**734,974**	**247,96 8**
19	68 1	wholesale and retail	512,79 0	10%	51,279	0.19 %	61,535		61,535	1%	85 %	14 %	613	52,530	8,392
20	70 1	forwarding agent	101,23 6	100 %	101,23 6	0.37 %	121,48 3		121,483	78 %	14 %	8%	94,842	17,337	9,304
21	70 4	estate agent	15,102	5%	755	0.00 %	906		906	5%	6%	90 %	41	51	814
22	70 5	renters, mediators, auctioneers	28,541	5%	1,427	0.01 %	1,712		1,712	5%	11 %	84 %	83	189	1,411
23	73 2	postman	115,79 3	10%	11,579	0.04 %	13,895		13,895	95 %	2%	3%	13,242	221	432
24		**subtotal admin. Functions**							**199,532**	**55 %**	**35 %**	**10 %**	**108,82 1**	**70,328**	**20,383**
25	**subtotal "direct activities"**								**2,187,86 4**	**37 %**	**44 %**	**19 %**	**811,44 2**	**957,675**	**418,73 7**
26	**indirect logistic occupations**														
27	75	enterpriser, auditor,			27,348	0.10 %		0,01 5	32,818						
28	77	purchase accounting people			45,580	0.17 %		0,02 5	54,696				168,78 0	199,196	87,097
29	78	office specialists and assistants			306,30 0	1.12 %		0,16 8	367,559						
30	**subtotal "indirect activities"**				**379,22 8**				**455,074**						
31	**total amount**								**2,642,92 7**				**980,22 2**	**1,156,87 1**	**505,83 4**

Source: Cp. Klaus, P., Hartmann, E. and Kille, H. (2010), p. 57

Furthermore, Kille and Schwemmer (2012) estimate a turnover of 222.5 Billion Euro (2001: 160 Billion Euro).[4] Experts in the logistics industry expect an economic growth of 4% to 5% per anno. This development provides every reason to consider education in the logistics industry and in particular the impact of the demographic change with a special emphasis: Enterprises need qualified personnel. Therefore continuing education becomes very important to overcome consequences of the demographic change. According to Roth and Hildebrand the logistic sector needs 14,000 executives annually.[5] In the logistics industry 30.03% of all full time employees have only an "unknown" education, 13.72% are totally without an education and only 2.78% of all full time employees possess a university degree.[6]

These figures result among other factors from the formerly "bad" image of the logistics industry in relation to low wages, inconvenient working times and uncertain economy because of a strong seasonal variation. Although in Germany there are 43 universities, 71 universities of applied sciences and 14 universities of cooperative education who offer academic training in logistics.[7] Furthermore, there are continuing education facilities who also allow achieving academic degree in logistics.[8] This personnel structure and different education overview of logistics full time employees lead to specify and to integrate the competence measurement instrument "Berufswertigkeit"[9] which compares identified qualification profiles of personnel with different requirements of business practice. The emphasis is to strengthen the current employees towards the Industry Qualification Framework (IQF) Logistics.

4 Cp. Kille, C. and Schwemmer, M. (2012), pp. 38
5 Cp. Hildebrand and Roth, A. (2008)
6 Cp. Roth, A. (2008); Roth, A. and Klaus, (2008); Hildebrand and Roth, A. (2008)
7 Cp. Roth, A. (2008); Roth and Klaus, (2008); Hildebrand and Roth, (2008)
8 Cp. Roth, A. (2010)
9 Cp. Klumpp, M. (2007)

Table 2: Qualification of employees in the logistics industry

economic sectors 2008		Number of employees covered by social insurance entire federal territory					
		A total of	Thereunder				
			with vocational training	without vocational training	university of applied science degree	university degree	vocational training unknown / no allocation possible./n.s.
		1	2	3	4	5	6
a total of thereunder		27,710,487	16,042,187	3,856,768	1,075,093	1,865,276	4,871,163
sum (lines 13 to 22) thereof		1,079,759	577,251	148,217	16,088	13,904	324,299
transport of goods in railway traffic	492	17,995	12,598	3,972	491	423	511
transport of goods in road traffic, moving transport	494	199,431	91,694	19,649	706	609	86,773
transport through pipelines	495	1,570	932	79	172	280	107
transport of goods in ocean and coastal shipping	502	19,610	9,986	1,138	2,569	858	5,059
transport of goods in inland water shipping	504	2,991	1,680	300	50	40	921
transport of goods in aviation and astronautics	512	459	206	105	9	12	127
warehousing	521	71,792	38,104	16,407	1,218	1,142	14,921
provision of other services in traffic	522	558,503	308,254	80,400	9,902	9,134	150,813
postal services of universal service providers	531	154,523	97,978	19,285	668	1,077	35,515
other postal, courier and express services	532	52,885	15,819	6,882	303	329	29,552

Source: Statistik der Bundesagentur für Arbeit (2011)

2 Competence Terminology in the Logistics Industry

2.1 Education in the Logistics Industry

A single definition of the term continuing education can hardly be found in literature. The synonym term of continuing education is known by the term further education.[10] In 1970 the German Education Council (Deutscher Bildungsrat) acknowledged and determined continuing education in the German education structure. Thus continuing education can be defined as continuation or resumption of learning after a first degree in vocational training. Continuing education begins after entrance of the workforce.[11] Furthermore continuing education includes formal, informal and non-formal learning.[12] Formel learning means a regulated and structured continuing training which is organized by institutions and where students have the chance to gain acknowledged degrees and certificates.[13] Informal learning is continuing education in project groups, networks and coaching without acknowledged degrees or certificates.[14] Non-formal learning is learning by doing or learning on the job.[15] Furthermore the Germany Ministry of Education and Research (BMBF) classify continuing education in general (no vocation-oriented), vocational (vocation-oriented by deepening practical experience) and higher (education at universities).[16] In general with continuing education a profit for all stakeholders can be achieved. The profit can be clustered in economic and social advantages. The two types of profit can be divided in three tiers:[17]

1) Macro: Profit for a whole society
   a. Economic profit: Economic growth and labour-market outcomes
   b. Social profit: Crime reduction, social cohesion, health and intergenerational benefits

10 Cp. Sauter et al. (1996); Oelmann, Wentzel (2002); Hanft, Knust (2009).
11 Cp. Deutscher Bildungsrat (1970).
12 Cp. Knust (2006); Erpenbeck, Sauer (2001); Willich, Minks, Schaeper (2002).
13 Cp. Dohmen (1996).
14 Cp. Knust (2006).
15 Cp. Dohmen (1996); Strake (2000).
16 Cp. BMBF (2011).
17 Cp. CEDEFOP (2011).

2) Meso: Profit for enterprises and groups
   a. Economic profit: Firms performance and employees productivity
   b. Social profit: Inclusion disadvantaged groups
3) Micro: Profit for individuals and oneself
   a. Economic profit: Employment opportunities, earning and career development
   b. Social profit: Life satisfaction and individual motivation

In Germany exists 16 different vocational education types such as professions in business administration, profession as truck or train driver, warehouse oriented professions and professions in CEP and moving freight service in the logistics sector.[18] Generally there are three ways to achieve competences in logistics. After a school qualification the students have the possibilities to begin directly vocational education training in the mentioned logistic profession and after achieving the qualification to continue the education for specifying competences or to begin an academic training at the university or university of applied sciences. Furthermore the logistic sector is characterized by career changers and for these type of newcomer there are also many possibilities at continuing education facilitates to acquire specific logistics knowledge.[19] To continue education with many years of practice experience minimum one year in the logistic sector there are two different ways to expand competences. For continuing education in Germany exist scientific oriented continuing education at universities in part or full time to achieve an academic degree or practice oriented continuing education.

2.2 Competence Requirements in the Logistics Indutsry

Competence is defined as “the ability to successfully meet complex demands in a particular context. Its manifestation, competent performance (which one may equate to effective action), depends on the mobilization of knowledge, cognitive and practical skills, as well as social and behavioral components such as attitudes, emotions, values and motivations”.[20] Competence demonstrates also level of student achievement in the science education context.[21] Competence is

18 Cp. Roth, Klaus (2008).
19 Cp. Roth (2010); Berufswelt Logistik (2011).
20 Hakkarainen et al. (2004).
21 Cp. Liu (2009).

not only skills, qualification or only knowledge but all these factors are the basic for a competence of person.

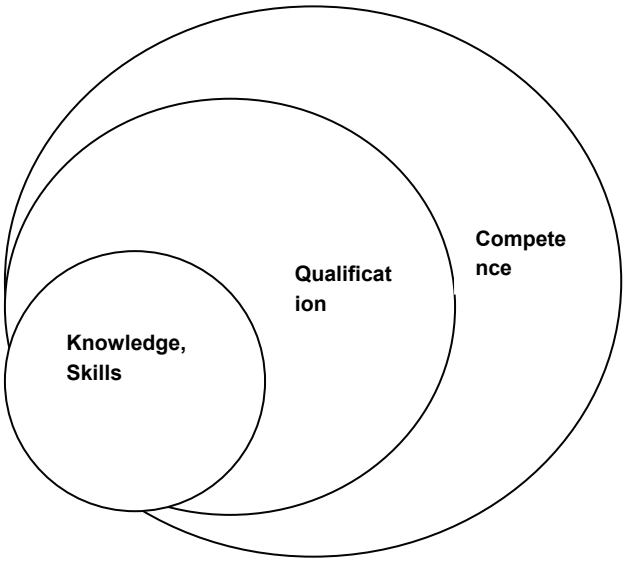


Figure 1: Context of knowledge, skills, qualification and competence (Erpenbeck and von Rosenstiel 2007)

The logistics industry is faced with six main subjects such as 1) globalization that includes open Supply Chains and separated production plants demand for reliable logistic processes. 2) Digitalization, it means high integration of information systems such as telematics, mobile handhelds, Tracking & Tracing, impact of 3D printing on the logistics etc. 3) Knowledge management which is one of the success factor of logistic service providers. 4) Volatility, because the logistics industry underlies economic fluctuations more than other industry sectors. 5) Security has to be ensured cause of the attacks by pirates on ocean going vessels. 6) Ecological aspects such as decreasing carbon emissions and generating concepts to overcome their impact on global warming.[22] In the logistics sector the access for everyone in particular the newcomer in the logistics industry for continuing education has to be improved. Furthermore the

22 Cp. Wimmer (2011).

logistics industry requires specialist and no generalists that mean that the access to specialize the skills has also to be simplified. One more aspect is to observe that the demographic change in Germany is to counteract with more flexible continuing education offers where the practice experiences of the employees have to be measured. All these reasons require a competence measurement concept and an IQF for the logistics industry which is suitable, practicable and compatible in every economic sector and in particular the logistics sector. One measurement concept which is developed,[23] called *Berufswertigkeit* fulfilled the needs of a general competence measurement tool. By regarding the development of the aging structure in logistics it can be seen that innovative logistics learning solutions have to be designed for offering employees possibilities for lifelong learning. The offer of logistics studies increased in the last years. Several universities provide pure logistics studies economic or technical studies with a main part of logistics content.[24] But the main challenge is to provide learning possibilities for employees without leaving their job. Employees have to increase their knowledge to tackle the tasks of logistics goods and services in a high velocity. Therefor flexible e-learning scenarios offer the possibility of knowledge acquisition on the job and account for above mentioned dependency on trends. The high integration of technical solutions underlines the employees' capability to acquire knowledge within an e-learning scenario. The capability of logistics learning mechanisms depends on four components: temporal components, cultural components, structural components and relational components.

The consideration of these four components is a major requirement of a successful learning process. The cultural component can be seen as a basis of learning because the whole logistics sector and nowadays supply chains are internationally oriented. The structural component regards the specifications of the employee's organization to realize learning activities on-the-job: flexible in time and position. Relational components assist the collaboration and communication within a strong cross-linked company structure and the temporal

23 Cp. Klumpp (2007); Klumpp and Schaumann (2007); Klumpp et al. (2011); Klumpp et al. (2013).

24 Cp. Hildebrand and Roth (2008); Keuschen and Klumpp (2010).

component supports the velocity of changes within the logistics sector and synchronizes them with the learning process.[25]

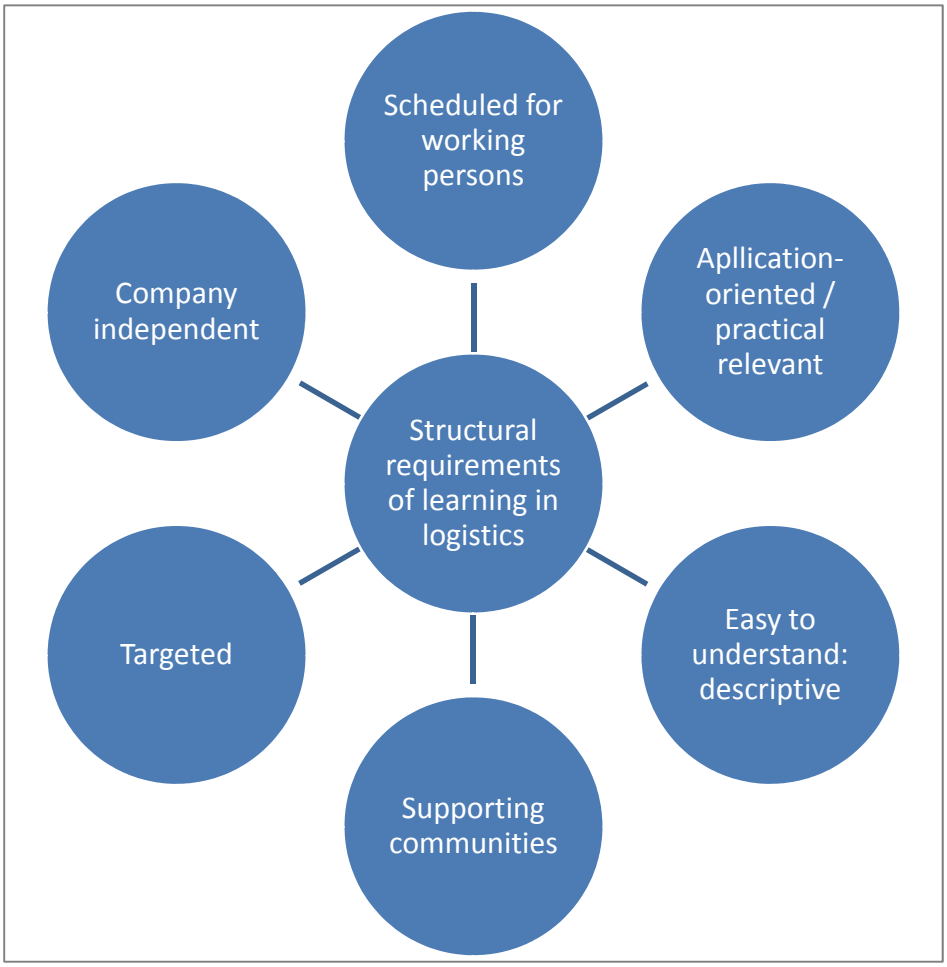


Figure 2: Structural education requirements in logistics industry

25 Cp. Esper et al. (2007).

3 Industry Qualification Framework in Logistics

3.1 Berufswertigkeit

Berufswertigkeit is a measurement concept to evaluate the competence of employees in different industry fields. This measurement concept relates to the concept of employability and was applied in Germany in 2007.[26] The main goal of *Berufswertigkeit* is an objective competence measurement of a single person regardless of formal education degrees and backgrounds – therefore typical requirements of the business practice are used for evaluation. These criteria for an effective competence measurement are adapted from business practice. Hereby the different education degrees could be compared and the results are practice- and output-oriented. The evaluation instrument *Berufswertigkeitsindex* includes 36 qualification requirement criteria that represent the modern daily work environment and are listed on the following page.

The Berufswertigkeitsindex (BWI) is calculated by a summed and unweighted index of individual evaluations of the 36 qualification requirement criteria. The value range of the BWI begins with 0 and end at 100 [0 = evaluation of all criteria with poor and 100 = evaluation of all criteria with very good]. The following equation represents the BWI calculation. This equation includes a recoding as the achieved average value is subtracted by the value five. Hereby the highest achieved value is the numerical figure 4 und the smallest possible figure is 0. The normalized index 100% is calculated by multiplication by 25%. Advantage of this is the comparability of all persons and no prejudiced importance of one competence criteria over another. Disadvantage is an exchangeability of criteria which is sometimes not realistic in business practice

The output-oriented measuring concept *Berufswertigkeit* serves as a basic field-evaluation concept for the development of such an Industry Qualifications Framework (IQF) for the logistics industry and integrates the required investigation of competences.[27] In the end of June 2011 a field survey with 1,068 persons was started.

26 Cp. Klumpp (2007); Klumpp and Schaumann (2007); Klumpp et al. (2011); Klumpp et al. (2013).

27 Cp. Klumpp and Schaumann (2007).

1. Efficiency
2. Independence and own initiative
3. Flexibility and adaptability
4. Work virtues
5. Stress resistance
6. Motivation and ability to lifelong learning and maintain to own competence profile
7. Coordinate the work- and lifetimes
8. Creativity
9. Loyalty
10. Risk-taking
11. Charisma
12. Ability to write and speak in German
13. Knowledge of a foreign language
14. Staff requirements and staff mission planning / staff development
15. Team, staff and leadership
16. Improving responsible care
17. Legal knowledge
18. Ability to apply modern information- and communication technologies (work place)
19. Communication and rhetoric
20. Assertiveness
21. International and intercultural competence
22. Costumer focus
23. Skills in mathematics and statistics
24. Preparation of cost estimates and quotations
25. Planning, implementation and documentation of orders and projects
26. Negotiations capacity
27. Analytical problem-oriented work
28. Quality management (optimization of processes and products or service quality)
29. Conceptual and strategic implementation of industry-specific knowledge and experience
30. Identification with the company
31. Strategic orientation, determine / control the complete company
32. Understanding of solutions for complex technical problems
33. Basic knowledge of business administration
34. Perception of functions of management and organization
35. Conceptual working in immediate workplace
36. Planning, control procurement and logistics processes

Figure 3 shows the BWI which significantly presents that 80% of the competences of 21.8% blue-collar as well as white-collar workers in Hesse are higher evaluated than blue-collar as well as white-collar workers in North-Rhine Westphalia, hereby it is to assume that the German federal state of Hesse indicates a very specialized logistics area, i.e. by Frankfurt Airport.

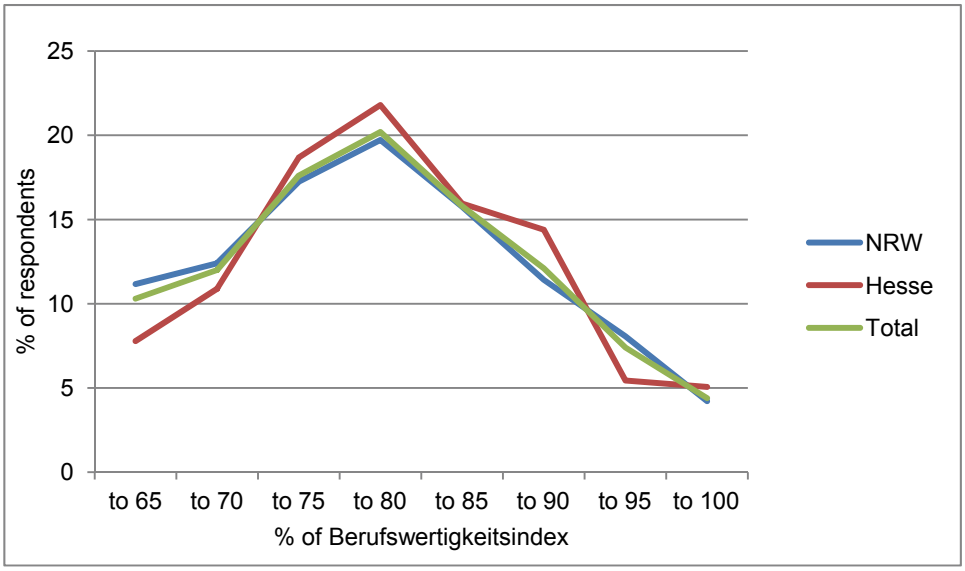


Figure 3: Berufswertigkeitsindex for the logistics industry (NRW and Hesse)

3.2 Industry Qualification Framework in the Logistics

Based on the results of the presented competence evaluation survey in the logistics industry; a first draft of an IQF Logistics can be designed. The idea is to implement specific industry qualifications frameworks in the logistics industry based on the requirement and criteria of the logistics sector. An IQF would especially for the logistics industry be important and could be very helpful. An example for different logistics qualifications levels connected to the current education degrees illustrates the following table. Further this structure is deployed in order to facilitate the standardization and adaption especially for SME companies in logistics – For designing education courses in logistics for working persons not only based on requirements with regard to content. A

suggestion could be the assignment of the BWI to each level as shown in following table.

Table 3: IQF for the logistics industry based on Berufswertigkeitsindex

	Competencies
Level 1 *to 65% BWI*	He/she has basic skills to carry out simple logistics operations under strict supervision like transport, transition handling, warehousing and picking activities in structured and stable contexts.
Level 2 *to 70% BWI*	He/she has basic factual and general knowledge of a field of work or study under supervision with some autonomy and to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools e.g. issuing a loading list, set a customer order, dispatching.
Level 3 *to 75% BWI*	He/she has knowledge of facts, principles, processes and general concepts, in a field of work or study e.g. fleet management and to accomplish tasks and solve problems by selecting and applying basic methods, tools, material and information e.g. customs clearance, procurement, transportation and inventory management.
Level 4 *to 80% BWI*	He/she has cognitive and practical skills required to generate solutions to specific problems by exercising self-management in contexts that are usually predicable, but changing supervise routine work of others: partial redesign of a supply chain or planning new inbound / Outbound routing destination as well as simple technology / IT tasks (with long-term logistics experience
Level 5 *to 85% BWI*	He/she has comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge e.g. developing a new logistics concept and implement it verifying which ICT innovation promotes efficiency and develop performance of self and others e.g. supervising and management of inventories, warehouse.
Level 6 *to 90% BWI*	He/she has advanced knowledge of a field of work or study, involving a critical understanding of theories and principles, e.g. developing and implementation of logistics education and training and demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study e.g. developing ICT tools, developing a last mile distribution concept or calculating Co2 emissions.
Level 7 *to 95% BWI*	He/she has highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research critical awareness of knowledge issues in a field and at the interface between different fields e.g. joint sourcing, financial flows or global warehousing
Level 8 *to 100% BWI*	He/she has most advanced skills, including synthesis / evaluation required to solve critical problems in research / innovation and to redefine knowledge or practice in logistics allowing him/her to demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and commitment new ideas or processes at the forefront of work contexts including independent planning and supervision of large logistics companies, logistics research or consulting projects with several international networks and implications, communicating also with the industry, trade and politics

The presented IQF for the logistics industry leads to the additional idea and concept, that according to the Berufswertigkeit survey results presented before, a singular attachment of degrees to only one IQF level is not feasible – though this idea is presented in most EQF and also NQF (national qualifications framework) concepts, it mays not correspond well with the practice of competence measurement and the demographic change.

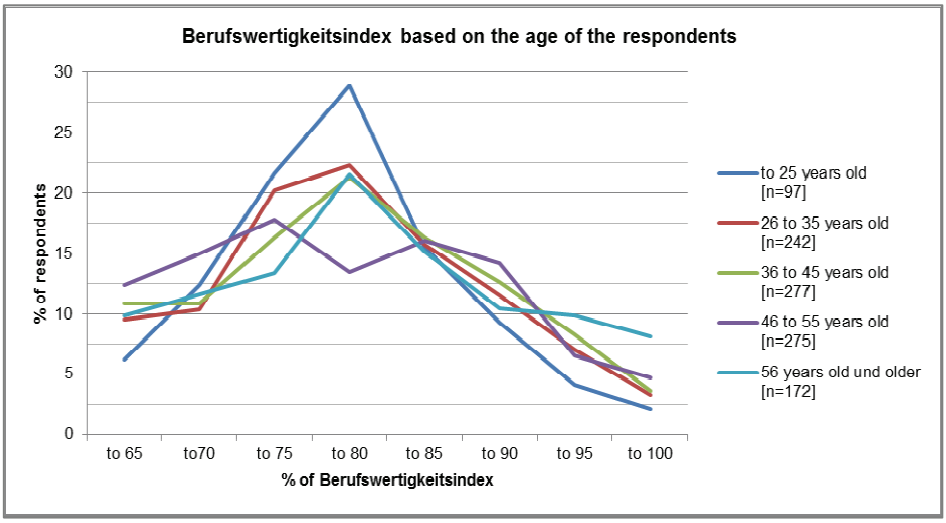


Figure 4: Berufswertigkeitsindex based on age of the respondents

Figure 4 presents the graph of the Berufswertigkeitsindex (BWI) across all age groups. The curve that presents the respondents with the age of up to 25 years indicates a high BWI with 75% to 80%. This group estimates themselves with a high BWI due to their specific logistics education and possibly their internet knowledge. In the remaining age groups the curve are flat compared to that. The BWI is equally distributed in the value of 65% to 100%. All graphs of the age groups except the age groups between 46 to 55 years old run in parallel. The remaining age groups achieve the highest BWI with 75% to 80%. The results show that 18% of respondents in the age of 46 to 55 years have a BWI of 70% to 75%. As could have been expected only 2% of the age group till 25 years achieve 95% to 100% and 8% of the age group older than 55 years old has the highest BWI of 95% to 100%.

4 Demographic Change

4.1 Demographic Development in Germany

Already in the 20th century, Keynes (1936) stated from the practical point of view „an era of increasing population tends to promote optimism, since demand will in general tend to exceed, rather than fall short of, what was hoped for. Moreover, a mistake resulting in a particular type of capital of being in temporary over-supply, is in such conditions rapidly corrected. But in an era of declining population the opposite is true. Demand tends to be below what was expected, and a state of over-supply is less easily corrected. Thus a pessimistic atmosphere may issue; and although at long last pessimism may tend to correct itself through its effect on supply the first result to prosperity of a change-over from an increasing to a declining population may be very disastrous."[28] The demographic change has a high impact on economy,[29] health care service, infrastructure, mobility as well as the pension system in Germany. The working-age population (20 to 64 years old) in Germany is currently 49.8 million. In 2030, the working-age population will probably have 6.3 million fewer persons than in 2010[30] and in 2060 the working-age population will decline about 35% compared to 2013.[31] Not only Germany is faced with the demographic change even the "European Union is facing unprecedented demographic changes (an aging population, low birth rates, changing family structures and migration). In the light of these challenges it is important, both at EU and national level, to review and adapt existing policies".[32] However in the future the economic demand has to be adjusted due to the demographic change. Skilled and productive employee allows economic growth. To resolve the conflict due to the impact of demographic change and to mitigate the threat of a shortage of employees we should strengthen the current employees, the underutilized population in the labour system i.e. women and disabled people and integrate the qualified immigrants in the labour system.

28 Keynes (1936), p. 14.
29 Cp. Klumpp et al. (2012).
30 Cp. Federal Minister (Bundesministerium des Inneren) (2011), p. 6.
31 Cp. Federal Statistical Office (Statistisches Bundesamt (2013).
32 European Commision (2010).

4.2 Impact of Demographic Change on IQF

German industry is affected by the demographic change. Especially baby-boomers in the 1950s and 1960s implicate that after 2015 many employees withdrawal from economic activity because of reaching retirement age.[33] The first impact of this phenomenon on the logistics employment situation can be seen at the development of the competence structure of German population. In this first case for a simulation of demographic impact we assumed the demographic development from 2013 until 2060 regarding the changing age-group distribution within total population. We considered the working-age population from 18 to 65 years old and the results of the *Berufswertigkeit* from figure 4. For the practical calculation the competence levels for the BWI distribution schemes were taken as a 'given' and multiplied with the changing age cohort shares of the total population in order to represent the changing overall competence levels of the total workforce due to the "aging effect" of demographic change.

The results are based on the following assumptions from the simulation concept and the 2012 Berufswertigkeit survey:

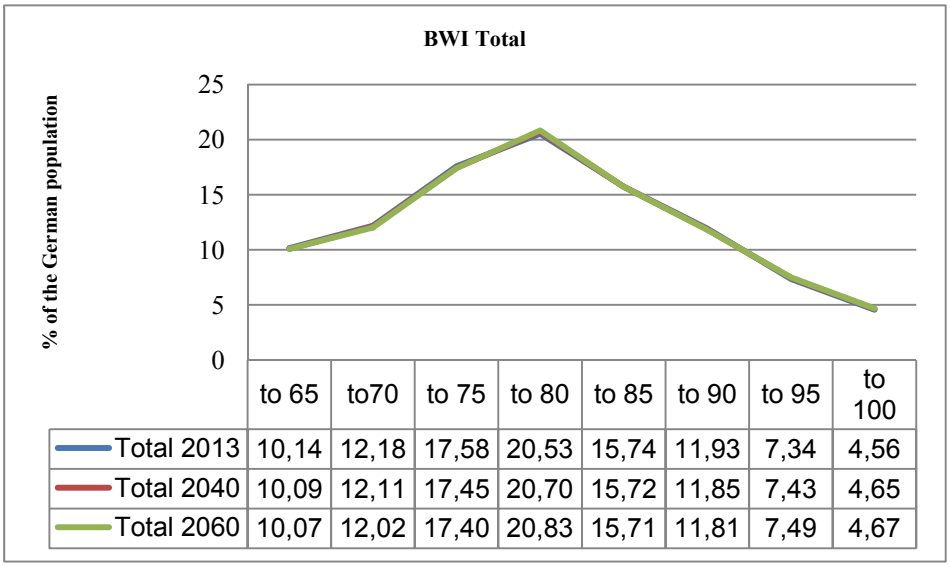
(i) It is assumed that the average competence levels within an age group (e.g. 18-25 year-olds) is stable over the time horizon 2013 to 2060.

(ii) It is assumed that the competence levels by age groups measured 2012 survey for the two states North-Rhine Westfalia and Hesse can be assumed to be the same for all of Germany – this is backed by the fact that also the age group distribution in 2012/2013 for the two states within the survey groups is very similar to the overall age distribution of the German workforce at this time.

(iii) It is finally assumed, that the competence levels experienced in the survey for the logistics sector is similar for the total workforce for all of Germany – which is possibly the weakest assumption if singling out other comparative industries such as finance or automotive with probably distinctively higher overall competence levels; but still the comparison of the specific logistics industry competence level may hold true for the overall German workforce as there are arguably also industries with

33 Cp. Bloom et al. (2011).

assumed lower competence levels like e.g. retailing, cleaning and construction.



	to 65	to70	to 75	to 80	to 85	to 90	to 95	to 100
Total 2013	10,14	12,18	17,58	20,53	15,74	11,93	7,34	4,56
Total 2040	10,09	12,11	17,45	20,70	15,72	11,85	7,43	4,65
Total 2060	10,07	12,02	17,40	20,83	15,71	11,81	7,49	4,67

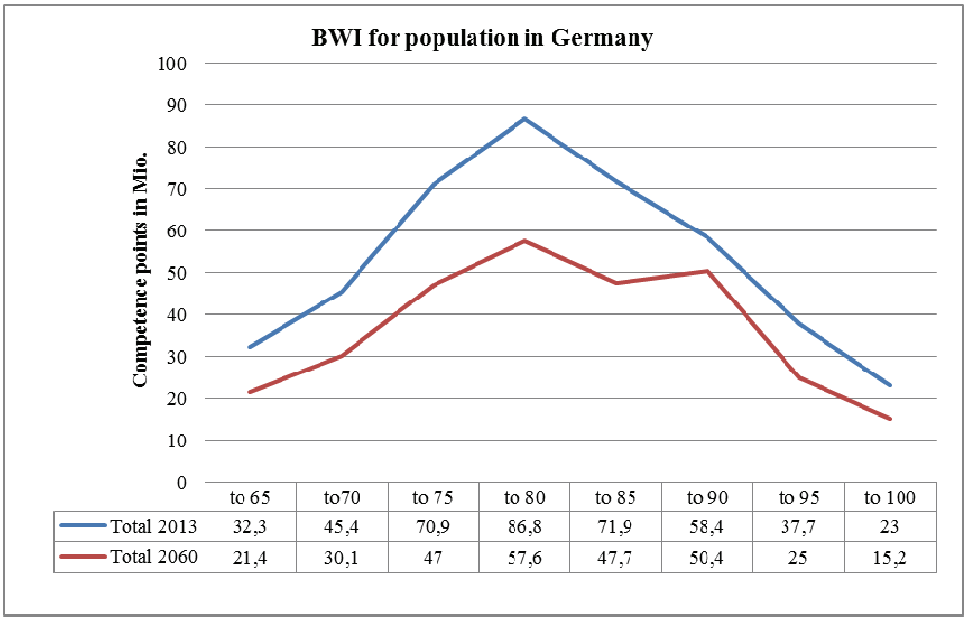
***Figure 5**:* The impact of the demographic change on the competence of the logistics industry

The part of employees over 50 increases continuously and this effect will be enforced in the following years. The number of employees up to 25 years stagnated in the last ten years so that the withdrawal of the older workforce members cannot be balanced completely. Therefore, we elaborated the mitigation of total competence points of the German working-age population (working-age population in the age of 18 years until 65 years old) in 2013 and 2060 to simulate the effect of the declining population in Germany on the overall competence pool.

The federal statistics office states that in Germany we have 52,001 persons between the age of 18 years old and 65 years old in 2013. In 2060, we will only have 34,487 persons in the age range of 18 years to 65 years old. To determine the effect of total accumulated competence points (CP) of the German working-age population in 2013 and 2060 we multiplied average BWI levels per BWI level category group (e.g. the value of 72.5 BWI point for the category from 70.0 to 75.0 BWI points) with the total population in 2013 as well as in 2060; therefore the following figure gives a representation of the total (quantitative)

competence pool in Germany for those two simulation years – depicting a sharp decline in the overall amount of competences available through the usual labor market channels due to the declining workforce.

Also, this simulation is restricted to severe assumptions, mainly the assumptions that average competence levels will remain steady and there is no major migration movement pushing up the German workforce numbers.



	to 65	to70	to 75	to 80	to 85	to 90	to 95	to 100
Total 2013	32,3	45,4	70,9	86,8	71,9	58,4	37,7	23
Total 2060	21,4	30,1	47	57,6	47,7	50,4	25	15,2

Figure 6: Competence comparison of the German population

Based on the results of the presented competence in the logistics industry, the IQF Logistics can be presented. The idea is to implement specific industry qualifications frameworks in the logistics industry based on the requirement and criteria of the logistics sector to mitigate the shortage of employability due to reduction of competences that is affected by the demographic change in Germany. An IQF logistics would especially for the logistics industry be important and could be very helpful. An example for different logistics qualifications levels connected to the current education degrees illustrates the following table. Furthermore, this structure is deployed in order to facilitate the standardization and adaption especially for SME companies in logistics. A high level of education increases work productivity and employment rates and have a positive effect on production. We assigned the BWI to each level to raise the

education level of the population, fight educational deficits and ensure equal educational opportunities.

5 Discussion and Outlook

Beside these identified main subjects high wage countries are affected by the demographic change in their population. The first impact of this phenomenon on the logistics employment situation can be seen at the development of the aging structure of German population in particular in the logistics industry. The part of employees over 50 increases continuously and this effect will be enforced in following years. The number of employees up to 25 years stagnates in the last ten years so that the withdrawal of the older ones cannot be balanced completely. By regarding the identified trends and the development of the aging structure in logistics it can be seen that innovative logistics learning solutions have to be designed for offering employees possibilities for lifelong learning. The offer of logistics studies increased in the last years. Several universities provide pure logistics studies economic or technical studies with a main part of logistics content.[34] But the main challenge is to provide learning possibilities for employees without leaving their job. Employees have to increase their knowledge to tackle the tasks of logistics goods and services in a high velocity. Therefor flexible e-learning scenarios are a solution that offer the possibility of knowledge acquisition on the job and account for above mentioned dependency on trends. The high integration of technical solutions underlines the employees' capability to acquire knowledge within an e-learning scenario. To support a success in continuing education and to motivate this generation suitable tools of learning such as e-learning were developed. The e-learning platform developed within the 21st century: Because information and communication technologies find one's way into our everyday life, like e.g. smartphones and notebooks, e-learning is nowadays a serious concept, especially for lifelong learning scenarios. The main advantage of e-learning is the possibility of receiving information anytime and anywhere.

This research illustrates that the logistics industry in Germany are faced with two main challenges that have to be solved to encounter the consequences as well as impact of the demographic change. The first challenge is to increase the competences of the employees and to establish a continues process that support continuing education by using the competence measurement instrument Berufswertigkeit to define their competences, secondly to evaluate the competence of the employees by applying the industry qualification

34 Cp. Keuschen and Klumpp (2010); Hildebrand and Roth (2008).

framework and thir to offer the logistics industry E-Learning platforms that support continuing education as a practice-oriented virtual classroom. Hereby the aim is to impment a concept to ensure the competence enrichment and competence enlargement in the logistics industry. The second challenge is to counteract the bad image of the logistics industry like low wages, bad working times and uncertain economy cause of a seasonal variation, uncivil conversational tone, bad career chances, few qualified personnel and heavy workloads with innovative concepts to ensure employment in the logistics industry.

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