

MANAGING FORMATION OF COMPETITIVE HUMAN CAPITAL IN PROJECT-ORIENTED COMPANIES

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ABSTRACT

The most important assets in project-oriented companies are knowledge and experience that are in its human capital. The goal of our quantitative correlation study is to gain insight on the role of the effective use of intellectual capital concerning the financial performance of the airlines in Kazakhstan through Project Management tools. Leading airlines in Kazakhstan provided information about human capital management through an online survey organized by SurveyMonkey. Airline HC's performance is based on the Intelligent Value-Added Index (VAIC) method and theoretical framework. Spearman's rank correlation coefficient was used to test a hypothetical relationship between variables. The results of our study showed a strong significant positive relationship between human capital management and the financial performance of airlines in the Republic of Kazakhstan. The results also show that the success of airlines depends on the expertise and competitive knowledge of its human capital.

Keywords: human capital; human capital management; agile methodologies; project management; public-private partnership; airlines of the Republic of Kazakhstan

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INTRODUCTION

Companies are constantly forced to innovate due to globalization, changing technologies and increased competition (Papikova, 2022). Companies create value and gain a competitive advantage through their intellectual capital (IC) and knowledge. (Ren and Song, 2021)

Leaders of large companies are searching for ways to compete in the global marketplace for excellence, extrapolating different roadmaps to succeed in highly volatile economic times. Intangible assets tend to be overlooked by corporate leaders because traditional accounting

methods do not capture it (Ghosh & Maji, 2015). The basis of the concept of human capital management of a modern organization is the increasing role of each employee, with his values, needs, aspirations, knowledge of his motivational attitudes, and the ability to shape and guide them in accordance with the strategy of its development. (Kaliyeva & Baisalova, 2019).

The purpose of this article is to gain insight on the role of the effective use of intellectual capital concerning the financial performance of airlines through Project Management tools.

The object of research is human capital

management functioning in modern airlines' organizational and economic relations systems.

The subject of research: the relationship between HCM & Financial statements of airlines.

Leaders of companies mismanage human capital, resulting in lower productivity and lower revenues (Jafaridehkordi & Rahim, 2014). The inability of top management to use the labor force can put a corporation at a competitive disadvantage (Kanchana & Raja Mohan, 2017). The specific problem considered in the study is that human capital management is inefficient in the airlines of the Republic of Kazakhstan. Airlines in Kazakhstan have experienced low customer satisfaction over the last 5 years (Uteulyyev, 2018). Leaders, the workforce, external and internal suppliers, and airline shareholders are some of the stakeholders that can benefit from our research.

The current global market conditions include fierce competition that companies face

regardless of the industry. When developing a competitive advantage, company leaders must use their workforce to fight global competition (Kanchana & Raja Mohan, 2017). The modern global economy is based on knowledge and intangible assets, which include strategies and methods for effective management (Mention, 2012; Stewart, 2002). Corporate financial results depend on the efficient use of intellectual resources (Mention & Bontis, 2013). Company leaders often fail to recognize intangible assets due to their obscure nature. Thus, the gap between the market and book values of a company's assets continues to widen, prompting researchers to explore hidden factors that cannot be explained by traditional accounting principles (Ghosh & Maji, 2015).

There are 5 big airlines in Kazakhstan, as shown in Table 1 and the biggest one is Air Astana.

Table 1: The largest airlines in the Republic of Kazakhstan

№	Airlines	Established	HCM
1	Air Astana	2001	PPP
2	SCAT	1997	Private company
3	Qazaq Air	2015	PPP
4	Bek Air	2011	Private company
5	Fly Arystan	2018	PPP

Notes: compiled by source (worlddata.info)

According to Table 1, corporate governance in PPP is a cooperation between Sovereign Wealth Fund Samruk-Kazyna JSC (51%) and BAE Systems (Kazakhstan) Limited (49%) based on sharing and stabilizing dispensation of risks, advantages, and expenses, integrities and obligations determined in the proper contracts. Human capital management focused on the top management of these companies.

The study of the Canadian experience made it possible to highlight the activities of the national body PPP Canada (since 2008) in co-investing in the development of the human capital of airlines, the development, and implementation of PPP mechanisms in the examination and assessment of the competencies of specialists (annual Canada report 2012-2013), conducting training seminars for employees, preparation of methodological recommendations and reports with the analysis of statistical data on the air

transportation market.

Particularly noteworthy is the model of the institution of governance at the national level of Great Britain, created for the implementation of the Private Finance Initiative (PFI) program or public-private partnership, including standardization, coordination, planning, attracting investments in training personnel in infrastructure projects, training employees in the principles of human capital quality management.

The study of foreign experience in training specialists made it possible to single out two international PPP certification programs:

1) The Institute for Public-Private Partnerships, which provides consulting and training services (passing any 4 of 27 courses), certification services to government and international organizations such as: the World Bank, the Inter-American Development Bank, the US Department of Transportation, the US Army

Corps of Engineers, The Dutch Ministry of Transport, the United Nations Economic Commission for Europe (UNECE), the Government of Myanmar, the Ministry of Energy and Natural Resources of Tanzania, the Treasury of Kenya, etc. Upon completion of the courses, specialists are awarded the appropriate qualifications, which is a recognition of their professionalism at the world level.

This Program is aimed at disseminating the best practices of public-private partnerships in human capital management in project-oriented companies, allowing existing and potential PPP participants to gain access to specialized knowledge about project management. CP3P is developed and launched by APMG International, a recognized educational attestation and certification leader.

2) Global Institute APMG International, whose main activity is: the development of accreditation and certification programs, expertise, and training courses; provision of consulting services; formation and management of a portfolio of professional certifications in various specializations per the high-quality standards adopted by the UK Accreditation Service (UKAS); development of "Methodological guidelines for preparing and passing the exam for the program" Certified specialist in the field of human capital management (APMG International, 2020).

APMG International provides accreditation services for organizations providing training and consulting services for the promotion of certification programs in various countries of the world.

The Public-Private Partnerships Certification Program APMG International is designed to bring uniformity of terms, standardize the process of implementing PPP projects around the world, and is aimed at mastering the key skills necessary for a project team in project management and obtaining industry knowledge.

Thus, studying foreign experience made it possible to identify factors for improving the quality of accreditation and certification of professional competencies of specialists in the field of public-private partnerships, such as training qualified personnel. In this regard, it is necessary:

- development of a professional certification system, providing an opportunity to undergo

training for specialists in the field of human capital management, teaching staff online training or internship in world centers for training specialists,

- development and expansion of the infrastructure for training personnel and training courses, development of a training program for the implementation of bachelor's and master's programs for training specialists in human capital management.
- The practice of improving the qualifications of specialists in Kazakhstan is built according to the following scheme (Figure 1), according to the professionals of the OECD Program to improve the prosperity of Eurasian countries (OECD Publishing, 2019), when that will be updated professional standards, it is suggested:
 - advancement of the organized structure, contributing to the definement of the level of modifications, observational updating of professional standards, the success of the system of schooling and learning,
 - growth of syllabus, evaluation and authentication processes based on the implementation of occupational standards, the emergence of a basis for the formation of courses and qualifications valuation,
 - improvement of valuation and authentication tools using executive standards,
 - Controlling teachings and meetings on an ongoing basis to form the concept of executive standards, study procedures, and roles,
 - advancement of the appraisal procedure in the way of improvement and performance of executive standards,
 - expansion of a PPP mechanism while introducing professional standards,
 - use in the development of professional standards for forecasting the development of the labor market,
 - when preparing a panel of national experts, mandating of teaching programs and creation of an organized framework for the execution of executive standards,
 - development of a monitoring and control system for compliance and ensuring

consistency between professional standards, curricula, and assessment procedures.

system. The basis of human capital management in a modern company is the employee's motivation, training, assessments, and ability to be creative and make decisions. Many wealthy organizations worldwide see this idea as the primary point in achieving the strategy of the company and its goals.

LITERATURE REVIEW

New sights to human capital are being asserted as one of the key points of the socio-economic

Human potential	Human resources	Human capital
<ul style="list-style-type: none"> •all abilities and skills that have been achieved, or can be achieved by a person, taking into account his natural abilities, inclinations, desires, education received and the desire to assimilate new knowledge 	<ul style="list-style-type: none"> •a set of unindividual grades of employees that determine their ability to work to produce products and spiritual benefits •staff of operating enterprises, pupils, students, all employed in the production sector, as well as all unemployed 	<ul style="list-style-type: none"> •achieved higher level of knowledge and skills, distinguishing the subject from the usual carrier of the labor force •the creation of HC is impossible without financial capabilities and health

Figure 1: Definition of concepts: human capital, human resources, and human potential.

Note: compiled by authors

Thus, HC can be defined as a set of human abilities formed in the process of personal improvement based on the active use of financial, social, intellectual, cultural, informational, and creative resources under the influence of motivational and stimulating moments.

interrelated definitions that follow from one another. The concept of "human capital" in its formation and development is based on the concept of "human potential," which first forms human resources and, with investment, and development, goes into human capital.

These three definitions - human potential, human resources, and human capital - are

Here is the relationship between structural capital and knowledge management in Figure 3.

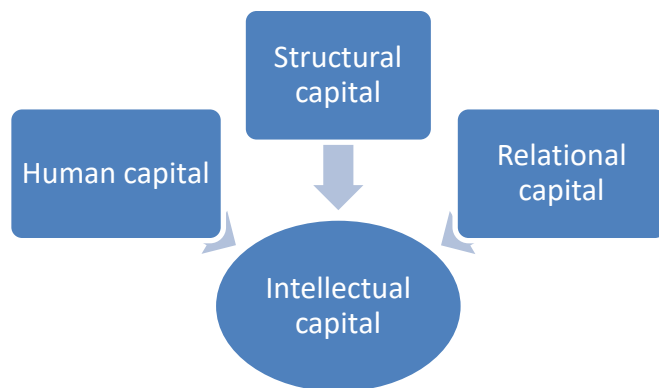


Figure 2: Intellectual capital standard.

Note: compiled by authors based on (Garfield, 2019)

Knowledge management provides infrastructure, processes, and databases that are a part of an organization's structural capital. Structural capital is one of the three primary components of intellectual capital – the intangible value of a business (1. human capital – its people, 2. relational capital – the value relating to its relationships, and 3. structural capital – everything that is left when the employees go home). It consists of the organization's supportive infrastructure, processes, and databases that enable human capital to function. Structural capital is owned by an organization and remains with an organization even when people leave. It includes capabilities, routines, methods, procedures, and methodologies embedded in the organization (Garfield, 2019).

The study has focused on the impact of IC on company performance in one or two sectors of the economy. These industries can mainly be considered as high value-added industries such as healthcare (Ali 2020; Ge and Xu 2020; Kamat 2008; Vishnu and Gupta 2014; Parast et al., 2013; Zhang et al., 2021), IT. (Jenopolyats et al. 2016), the financial sector (Joshi et al. 2013; Tran and Waugh 2018; Zhang et al. 2021) and the petrochemical sector (Parast et al. 2013 G.). Several studies have also analyzed the impact of IC in lower value-added sectors such as agriculture (Ovechkin et al., 2021; Xu and Wang, 2019) and the manufacturing sector (Xu and Li, 2020). In addition, Zhang et al. (2021) conducted a cross-industry comparison study. They showed that different elements of IC have different effects on the performance of companies in the financial and pharmaceutical industries. For example, these results indicate that the impact of human capital efficiency is higher in companies in the pharmaceutical sector.

From a geographical perspective, many studies have analyzed the impact of IC on profitability, mainly in developing countries such as China (Ge and Xu, 2020; Li et al., 2020; Xu and Li, 2020; Xu and Wang, 2019) and India (Ali 2020; Kamat 2008; Vishnu and Gupta 2014). In addition, many studies focusing on IC or human capital have been conducted in Central and Eastern European (CEE) countries such as Slovakia (Hamad and Tarnoczi, 2021; Pílková, 2013), Czech Republic (Hamad and Tarnoczi, 2021; Yousaf, 2021) .), Poland (Kozera-Kowalska and Baum, 2018), Hungary (Hamad and Tarnotsi, 2021), Ukraine

(Rodchenko et al., 2021), Romania (Morariu, 2014) and Serbia (Dzhenopolyats et al. 2016), or Central Asia such as Azerbaijan (Ismailzade et al. 2021) or Russia (Ovechkin et al. 2021).

Human resource management in a project-oriented company, as a system of social and labor relations in modern economic conditions, requires the existence of certain conditions and prerequisites in the field of organizational culture of project management as a powerful tool in achieving a common understanding of mutual responsibility by all employees, at all levels of the organization.

The literature review helps to find out the concept of human capital management research, which is built through project management tools to determine:

1. Systems for managing the mission, values, and strategy of the object using a balanced scorecard (BSC).
2. Conditions of the management system (team management, communications, involvement)
3. Factors affecting human capital management
4. Principles, priorities, mechanisms, tools, etc. (PMBOK 6, 2017).

Project management of human capital is based on an agile methodology:

1. Press the correct levers. Change the performance of teams to achieve a greater effect than on the productivity of individual employees.
2. Overcome the limits of possibilities. Great teams strive for a goal much bigger than the individual's aspirations.
3. Autonomy. Give employees the freedom to make independent decisions and act at their own discretion.
4. Multifunctionality. To have in each division such a set of specialists who have all the skills necessary for the effective operation of the company, whatever the task.
5. Win by small numbers. Divide employees into small teams: the smaller - the faster the work.
6. Blaming is stupid - there are no bad employees. There are harmful systems that encourage inappropriate behavior and reward poor performance (Sutherland, 2014).

The accumulation of creative and intellectual energy requires costs. Still, the organization of

this work for the further generation of these types of energy by employees is always economically beneficial and improves the quality of products or services.

The mechanism of human capital management in project-oriented companies is a consciously regulated system of forms, methods, and principles, as well as a set of government-regulated relations and relationships of stakeholders, through which a targeted impact on the formation of human capital is carried out.

The mechanism aims to increase employees' creative and intellectual levels, which means improving the quality of products or services that ensure the competitive position of a project-oriented company and socio-economic efficiency. The achievement of these goals is carried out by solving several tasks of organizational and psychophysiological influence (PMBOK 6, 2017).

The mechanism is developed based on the principles:

- activity of managerial activity - stimulating the creative manifestation of the intellectual potential of employees to create intellectual capital and obtain economic returns.
- flexibility and adaptability - staff readiness for changes, which ensures the necessary evolutionary transformations (metamorphoses), continuous improvement, and human capital development in the organization.
- openness and accessibility of knowledge - freedom in the transfer, dissemination, and use of professional expertise (formal and informal), which provides the multiplication effect of organizational knowledge, the multivariance of their transformation into the organization's intellectual capital (PMBOK 6, 2017).

According to the Annual report 2017 of Air Astana won the best employer title in Kazakhstan in 2016–2017 and a leader in Kazakhstan in terms of HR policy and human resource development, according to the international agency Universum. Air Astana has a strategy "Our People", which built on the continuous development and improvement of employee's experience, which is formed based on three fundamental workspaces: cultural, technological, and physical. EA considers this approach as the main motivating factor for maximizing the potential of employees and increasing the level of involvement.

As the basic comparable human capital management models, we choose American (UNITED), European (represented by the EU and, above all, Germany (Lufthansa), France (Air France) and Great Britain (British Airways)) and Japanese (Japan Airlines).

The Japanese model is more focused on people, on achieving satisfaction with their work, and is designed for the long-term development of both people and production. The American model is more dynamic and focused on making a profit in a short time. Here, more valuable is the development of competition (competitiveness), the qualities of an employee that make him more competitive, responsible for his actions and deeds, and strong motivation of employees. A big focus on social development characterizes the European model, creating good working conditions for individual workers, and providing them with various social guarantees, i.e., it is more socially oriented (Kravchenko, 2002). The American and Japanese models of human resource management most deserve to be a good example of solving the problems of modern production efficiency.

METHODOLOGY

The human capital management methodology accompanies the life cycle of a person in an organization: from when he was an applicant or candidate until the employee is fired from the enterprise.

The mechanism of human capital management in project-oriented companies is a deliberately regulated system of forms, methods, and principles, as well as a set of relations regulated by the state and the interconnections of stakeholders, through which a targeted impact on the formation of human capital is carried out.

In our study, we use the theoretical scientific method of hypothesis, in which we will try to prove the relationship linking to the effectiveness of human capital management and its impact on the organization's financial performance. The significance of HC management is achieved using project management tools. For this, we use a quantitative research method.

The quantitative method is most suitable for solving our research problem and questions. Non-experimental research methods include quantitative, qualitative, and mixed methods

that are used in empirical research (Reio, 2016). Quantitative research differs from qualitative research in that the researcher can manipulate one or more variables, thus, observing the effect on one or more variables. Quantitative research does not establish the manipulation of variables by the researcher and instead examines relationships or relationships between variables (Reio, 2016). Quantitative research is common in social science research.

Quantitative research methodology involves analyzing numbers by examining statistical patterns and drawing inferences that provide a macro view (Bandaru, 2015). However, the quantitative methodology may not provide the full complexity of human experience and study the reasons why or how. Qualitative research methodology focuses on the nature of objects or phenomena that collect data from interviews and the life experiences of research subjects, providing a micro-review (Newton et al., 2013; Rudesta et al., 2013). Limitations of qualitative methods are that conclusions can't be spread due to the small sample size and the subjective character of the research topic. In addition, disadvantages may be that results may differ from day to day for different people (Newton et al., 2013; Rudesta et al., 2013). The blended research method provides strengths that can compensate for the shortcomings of quantitative and qualitative research. A mixed method can be complex as opposed to using a single method and should be used depending on the nature of the study (Newton et al., 2013; Rudesta et al., 2013).

To measure the efficiency of using HC, Tobin's Q-coefficient is used - the ratio between the market and book value of the company's assets. The change in this ratio indirectly reflects the efficiency of using the company's intellectual capital.

Research Questions and Hypotheses

The following research questions were used to determine the relationship between self-reported and measured intellectual capital (IC) usage and the financial performance of the airline industry in Kazakhstan. The corresponding null hypothesis (Ho) and the alternative hypothesis (Ha) are also presented.

RQ1: To what extent, if any, is there a relationship between self-reported intellectual capital usage and financial performance (ROA) within the airline industry in Kazakhstan?

H1o: There is no relationship between self-reported intellectual capital usage and financial performance (ROA) within the airline industry in Kazakhstan.

H1a: There is a relationship between self-reported intellectual capital usage and financial performance (ROA) within the airline industry in Kazakhstan.

RQ2: To what extent, if any, is there a relationship between the measured intellectual capital usage (VAIC) and the financial performance (ROA) within the airline industry in Kazakhstan?

H2o: There is no relationship between the measured intellectual capital usage (VAIC) and the financial performance (ROA) within the airline industry in Kazakhstan.

H2a: There is a relationship between measured intellectual capital usage (VAIC) and financial performance (ROA) within the airline industry in Kazakhstan.

Theoretical Framework

The conceptual framework of the research study was centered on the VAIC framework model for measuring the efficiency of value that intellectual capital brings to organizations (Volkov, 2012). The VAIC model is an integrative theoretical framework of organizations considering knowledge workers as capital assets rather than manual workers at a cost (Drucker, 1999; Santos-Rodrigues, Dorrego, & Jardon, 2010).

The VAIC model expands the concept of measuring the added actual value of intellectual capital on the financial performance of the corporations. The Skandia Navigator captured an earlier measurement of intellectual capital, which led to the development of the VAIC method model (Pulic, 1998; Skandia, 1999).

The VAIC method (Value added intellectual coefficient) measures the contribution of intellectual value added at the enterprise; most authors also use it to conduct empirical research. The VAIC method refers to cost measurement methods that determine the level of human capital development by some integral criterion.

The value-added intellectual ratio (VAIC) model measures the efficiency of the use of three main varieties of a company's sources, namely: physical capital value added (CEE), human capital value added (HCE) and structural capital

value added (SCE). Their sum is the merit of the value-added intellectual coefficient (VAIC). The higher this coefficient, the higher the prospect of the company is estimated, its capacity to generate added value.

The formula for the coefficient is as follows:

$$VAIC = HCE + SCE + CEE, (1)$$

where:

HCE - shows how effectively human capital is used or the contribution of human capital to added value.

SCE - indicates how efficiently the capital of the company is used, in other words, the contribution of organizational capital to added value.

CEE - indicates how beneficially the funds involved or the contribution of the capital involved to added value is used. It is determined by dividing the value added by the invested capital.

RESEARCH RESULTS

HCM Questionnaire

Data was collected by the questionnaire survey focused on the approach of human capital (HR) management in airlines and produced absorbing results considering how things stand.

The survey found that airlines view investing in employee education and training as the prime method to develop employees. Only a tiny proportion of businesses also recognize the significance of other ways of funding human capital, such as financing for workers' security, health, and safety. If companies prefer effective management with HC, heads must review their attitude in the future and devote time and money to this investment.

Revealed significant shortcomings in the use of several types of teaching by organizations. Businesses would like to expertise-based education tasks connected to their work activities that target large groups of people rather than individualized learning activities that can provide higher added value for employees

The survey questions were related to human capital management in airlines. The survey questions were grouped into three ingredients of intellectual capital: (a) human, (b) relational and (c) structural capital. Within each component,

there were several questions to balance the assessment of participants' opinions. The survey responses were analyzed using both parametric and nonparametric correlation methods. Correlation statistics were used to determine the extent to which there is a relationship between the survey result and the actual or measured human capital management and the company's profitability as measured by ROA.

The analysis includes determining whether there is a relationship between estimated and actual or measured data on human capital management (use).

Statistical methods are used to process human capital management data collected through research and measured or actual use of human capital collected from airline financial statements. The data from the survey and financial statements were uploaded to the IBM SPSS® software version. The described statistical data and correlation analysis were calculated in the Program. The analysis is information in the form of scatter charts and tables. The strengths and weaknesses of the relationship between the variables were calculated, which may explain the existence or absence of the relationship between the variables (Kraemer et al., 2016; Blasey et al., 2016). Spearman's rank correlation has been performed on the collected data, which can help in analyzing the relationship between variables (Newton et al., 2013; Rudesta et al., 2013).

The initial survey was pre-tested by a selected group of experts with some terminology changes based on suggestions from participants. Cronbach's Alpha for the combined areas of human capital was 0,93, for human capital reports 0,89, for relational capital reports 0,77, and for structural capital reports 0,90. Reliable data is data above 0,7; thus, the survey instrument was found to be reliable, as shown in Table 2.

Table 2: Verification of reliability and validity using Alpha Cronbach

Cronbach's Alpha	# of questions	Questions
0,861	47	Components of Combined Intellectual Capital (IC)
0,824	17	Human capital (HC) component
0,789	15	Relational capital component (RC)
0,891	15	Component Structural Capital (SC)

Statistical tests were performed to provide a summary of the findings. Descriptive statistics in the Table provide a broad description of the data collected and list the basis for quantitative

analysis. Variable numerical indicators of the central trend revealed the mean, median, mode, and sum of collected data.

Table 3: Descriptive statistics for IBM SPSS

Indicators	Questionnaire data			Data from financial statements	
	HC	RC	SC	VAIC	ROA
Average	3,708	3,818	3,716	4,647	0,733
Median	3,792	3,700	3,666	3,325	0,0454
Mode	3,800	3,333	3,066	3,262	0,0386
Standard deviation	0,637	0,418	0,492	6,572	1,206
Change	0,406	0,175	0,243	43,195	1,455
Assymetry	-0,342	0,362	0,357	5,165	1,507
Sharpness of distribution of values	0,215	-1,107	-,059	30,074	1,012
Standard errors	0,668	0,668	0,668	0,668	0,668
Min value	2,26	3,133	2,866	-3,809	-0,031
Max value	4,9	4,600	4,866	44,610	4,099
Total	181	187	182		

Notes:

The confidence interval for the mean was 95

Number of airlines reviewed = 4

HC, RC, and SC are IC components of human, relational and structural capital.

IR - intellectual capital
(questionnaire)

VAIC stands for Intelligent Value Added (Measured).

ROA is the return on assets (airline financials).

The figure below shows a sample of the abnormal distribution data of the ROA histogram.

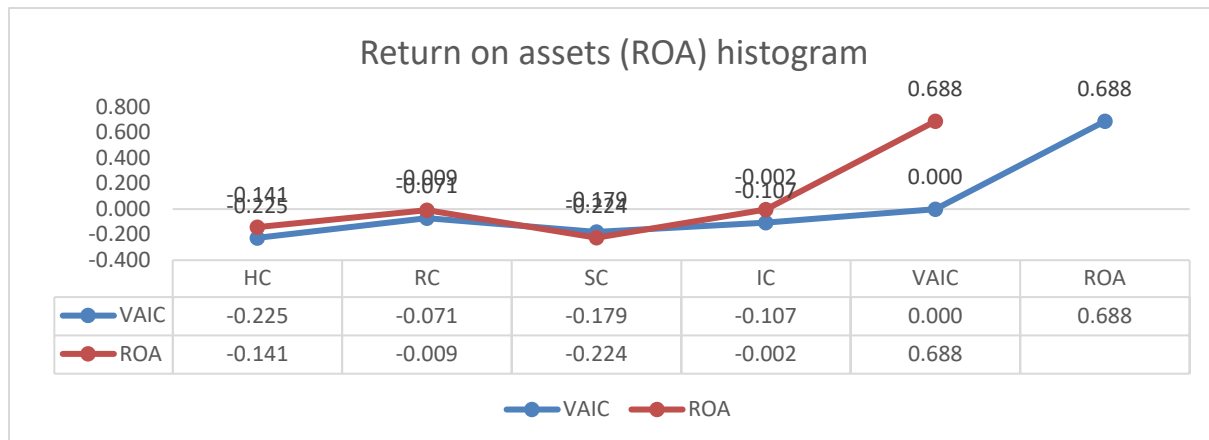


Figure 3: Return on assets (ROA) histogram

Table 4: Spearman's correlation coefficients

Airlines	HC	RC	SC	IC	VAIC	ROA
VAIC	-0,225	-0,071	-0,179	-0,107		0,688**
ROA	-0,141	-0,009	-0,224	-0,002	0,688**	

Note: Correlation is significant at the 0.01 level (two-sided).

Spearman's correlation analysis with a sample of $n = 4$ showed that there is still a moderate 0.668 relationship between measured human capital management (VAIC) and airline financial performance (ROA). Thus, the sample of $n = 4$ airlines in the RK market was retained, as there were no signs of adverse changes in the statistical results of this study. The previous data from the recovered data confirmed the abnormal data distribution.

The strength of the correlation was presented as the coefficient of correlation in all three methods (a) Spearman r_s , (b) Kendall τ , and (c) Pearson r . The correlation coefficient range is from -1 to +1, with the degree of relationship

between the variables being negative, zero, or positive. The standard measurement in assessing the strength of a relationship is based on the absolute value of r (correlation coefficient) to make all values positive (Newton et al., 2013; Rudesta et al., 2013).

The variables in this correlation study are the results of the human capital questionnaire, actual measured human capital management (VAIC), and the other variable is a return on assets (ROA). Table 5 contains Spearman's selected correlation between the survey, actual measured usage (VAIC), and ROA airline performance.

Table 5: Coefficient of correlation of Spearman r_s airlines.

Airline ($N = 4$)	HC	RC	SC	IC	VAIC	ROA
HC		0,753**	0,652**	0,545**	-0,249	-0,170
RC	0,753**		0,577**	0,520**	-0,109	-0,048
SC	0,652**	0,577**		0,575**	-0,195	-0,241
IC	0,545**	0,520**	0,575**		-0,131	-0,030
VAIC	-0,249	-0,109	-0,195	-0,131		0,707**
ROA	-0,170	-0,048	-0,241	-0,030	0,707**	

Note: Correlation is significant at 0,01 level

As a result of our research to determine the

relationship between survey results on human capital management in airlines and financial

performance, two hypotheses were identified:

1. There is a connection between HC management and financial statement (ROA).

Our hypothesis of the study is to determine the connection between the results of the survey on human capital management and financial performance (ROA) in the airlines of the Republic of Kazakhstan to determine the effectiveness of

the applied methods of HR management. Spearman's correlation analysis is designed to investigate the two-dimensional relationship between one variable, which is the survey's human capital, and another variable, the return on airline assets. The data was run in IBM SPSS version 25 software, where correlation formulas were calculated. The results of Spearman's correlation analysis are presented in Table 6.

Table 6: Correlation coefficients of human capital components

Airlines (<i>N</i> = 4)	HC	RC	SC	IC	VAIC	ROA
HC		0,753**	0,652**	0,545**	-0,249	-0,170
RC	0,753**		0,577**	0,520**	-0,109	-0,048
SC	0,652**	0,577**		0,575**	-0,195	-0,241
IC	0,545**	0,520**	0,575**		-0,131	-0,030

The analysis shows a negative connection of -0,030 between the human capital management survey and the airline's financial performance. The analysis is not statistically significant as the probability is higher than 0,05 ($r > 0,05$) with two values with a 95% confidence level. In the case of an inverse data distribution, there is no need to determine Spearman's correlation analysis statistics (Puth, 2015).

Thus, the inability to reject first hypothesis 1 is

consistent with the relationship between the human capital management survey result and the airline's financial performance (ROA). At r levels greater than 0,05, the results indicate that the variables are not statistically significantly different (Fields, 2013). As a result of the test, it is impossible to reject hypothesis 1.

2. There is no relationship between HC management and financial performance (ROA).

Table 7 Spearman's correlation coefficients VAIC and ROA

Airlines (<i>N</i> = 4)	HC	RC	SC	IC	VAIC	ROA
VAIC	-0,249	-0,109	-0,195	-0,131		0,707**
ROA	-0,170	-0,048	-0,241	-0,030	0,707**	

Note: Correlation is significant at 0,01 level

As the table shows, there is a positive association of 0,707 between the human capital management survey and the airline's financial performance. The data type of the variables was measured by scaling factors. An analysis is considered statistically significant if the probability is less than 0.01 ($r < 0.01$). Therefore, rejecting hypothesis 2 is consistent with the relationship between measured human capital utilization (VAIC) and financial performance (ROA). At r levels less than 0.01, the results show that the variables are statistically significantly different (Fields, 2013). Therefore, hypothesis 2 is refuted.

DISCUSSION

Present global market conditions include fierce competition that companies encounter regardless of the industry. In developing a competitive advantage, it is vital that leaders of organizations leverage their workforce to confront global competition (Kanchana & Raja Mohan, 2017). The modern global economy is based on knowledge and intangible assets, which are knowledge-based and includes strategies and techniques for effective management (Mention, 2012; Stewart, 2002). Corporate financial performance depends on the efficient use of intellectual resources (Mention & Bontis, 2013). Leaders of organizations often fail to recognize intangible assets because of their obscure nature. Therefore, an increasing gap between the market

and book values of the company assets prompts researchers to examine hidden factors that cannot be explained by traditional accounting principles (Ghosh & Maji, 2015).

Knowledge base and intellectual capital are integral to business economics in corporations. Intellectual capital management plays a major role in positioning corporations at an advantage to compete in the global market (Relich, Witkowski, Saniuk, & Kuźdowicz, 2014). Leaders of corporations may ignore the effect of not considering intangible assets such as intellectual capital on business decisions; however, the vacillation in long-term strategic planning can be ominous in global market positioning (Relich et al., 2014). Researchers studying global economic growth and productivity improvement are discovering the need to tap into the company's internal resources (Salonius & Käpylä, 2013). Intellectual capital is emerging as an essential factor in the global economy (Jafaridehkordi & Rahim, 2014).

The relationship between IC and company performance during a crisis has so far been studied by only a few researchers (Kehelwalatenna, 2016; Morariu, 2014; Nadeem et al., 2019).

Existing research has largely confirmed the positive relationship between a company's profitability and its IC. Studies using the value-added intelligence (VAIC) model or its components (Chen et al., 2005; Clarke et al., 2011; Nadeem et al., 2019), as well as studies using various characteristics that describe IC (Guo et al., 2012; Ren and Song, 2021) have shown that companies with a certain level of IC achieve higher returns on assets (ROA) or return on equity (ROE).

A review of the literature published between January and June 2017 found four studies in which investigators used the VAIC model (Asare, Alhassan, Asamoah, and Ntov-Gyamfi, 2017; Nadim, Gan, and Nguyen, 2017; Nawaz, 2017; Shawtari, Saiti, Mohamad & Rashid, 2017).

The validity of research data is essential to establish the accuracy, validity, and appropriateness of the use of results to achieve reliable research results (Newton & Rudesta, 2013). Research results are uncertain when the tools used to collect and analyze data are invalid or unreliable (Lakshmi & Mohideen, 2013). Validity and reliability are fundamental elements in instrument testing (Newton & Rudesta, 2013).

A data collection process is only valid and reliable if the procedure is reliable, stable, predictable, and produces the same results every time (Steyerberg & Harrell, 2016). The researcher should carefully examine validated methods to ensure the highest possible level of certainty (Newton & Rudesta, 2013).

Descriptive and correlation statistics collected during the study are used to analyze the VAIC scores and data. Statistical correlation analysis is part of a correlation study design that was used to examine the strength of the correlation (Newton & Rudesta, 2013) between human capital management (actual and estimated) and financial performance (ROA) of airlines in Kazakhstan.

CONCLUSIONS

Business leaders grappled with the transformational shifts from factory and assembly line production to a knowledge society (Drucker, 2017). Business leaders tend to overlook the intangible assets of business organizations because of traditional accounting practices (Ghosh & Maji, 2015). The general problem in the study was that organizational leaders are not efficiently utilizing intellectual capital resulting in poor performance and lost income (Jafaridehkordi & Rahim, 2014). This study centered on the airline industry in the Republic of Kazakhstan and was the first study conducted on intellectual capital in the airline industry in Kazakhstan. The specific problem addressed in the study was that intellectual capital is not utilized efficiently in the airline industry within the Republic of Kazakhstan (Khalique & Isa, 2015). A growing gap continues between the corporations' market and book values, triggering the need to examine hidden factors that cannot be explained by traditional accounting principles (Ghosh & Maji, 2015).

The findings supported the first research question's null hypothesis in that the null hypothesis stated that there is no connection between self-reported intellectual capital usage and the financial statement (ROA) within the airline industry in Kazakhstan. In contrast, the findings did not support the second research question's null hypothesis. The null hypothesis stated that there is no connection between the measured intellectual capital usage (VAIC) and the financial statement (ROA) within the airline industry in Kazakhstan. In other words, the

alternate hypothesis, which stated that there is a connection between measured intellectual capital usage (VAIC) and the financial statement (ROA) within the airline industry in Kazakhstan, was accepted.

An unexpected finding was discovered in the data analysis after the data were collected. The data collected had a non-normal distribution, requiring nonparametric statistical tests such as Spearman rho correlation instead of Pearson's correlation test. This non-normal data distribution countered the body of knowledge supported by the research studies conducted in other business industries. The non-normal data distribution was not expected because studies on intellectual capital did not show this type of data distribution. Additionally, the results of self-reports on intellectual capital usage by leaders and executives in their organizations on the financial performance of the corporations were also unexpected.

Spearman rank correlation analysis was used to determine the relationships between self-report intellectual capital usage, measured intellectual capital, and financial performance of the airlines within the Republic of Kazakhstan. Correlation analysis was performed for intellectual capital usage on the financial performance of the airlines as well as various components of intellectual capital variables. Statistical analysis was used to examine the reliability and validity of the survey instruments and the power of the sample size used in this study. The research may be applied to other business sectors and settings.

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REFERENCES

A Guide to the Project Management Body of Knowledge (PMBOK® Guide)–Sixth Edition (2017) by Project Management Institute.
Ali, A. (2020). Do the giant players enjoy

profitability? Analytical study of the Pharmaceutical Industry of India. *Talent Development & Excellence*, 12(2s), 3249-3260.

APMG International. [online] <https://apmg-international.com> (Accessed 19 November 2020).

Asare, N., Alhassan, A. L., Asamoah, M. E., & Ntow-Gyamfi, M. (2017). Intellectual capital and profitability in an emerging market. *Journal of Economic and Administrative Sciences*, 33, 2-19. <https://doi:10.1108/JEAS-06-2016-0016>

Bandaru, S., Gaur, A., Deb, K., Khare, V., & Chougule, R. (2015). Development, analysis and applications of a quantitative methodology for assessing customer satisfaction using evolutionary optimization. *Applied Soft Computing*, No.30, pp.265- 278.

Chen, M. C., Cheng, S. J., and Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital*, 6(2), pp. 159–176. <https://doi.org/10.1108/14691930510592771>

Clarke, M., Seng, D., and Whitting, R. H. (2011). Intellectual Capital and Firm Performance in Australia. *Journal of Intellectual Capital*, 12(4), pp. 505-530. <https://doi.org/10.1108/14691931111181706>

Drucker, P. F. (1992). The new society of organizations. *Harvard Business Review*, 70(5), 95-104. Retrieved from <http://www.hbr.org>

Drucker, P. F. (1999). Knowledge-worker productivity: The biggest challenge. *California Management Review*, 41(2), 79-94. <https://doi.org/10.2307/41165987>

Drucker, P. F. (2017). *The theory of business* (Harvard Business Review Classics).

Fields, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Thousand Oaks, CA: Sage Publications.

Ghosh, S. K., & Maji, S. G. (2015). Empirical validity of value-added intellectual coefficient model in Indian knowledge-based sector. *Global Business Review*, 16, 947-962. <https://doi.org/10.1177/0972150915597597>

Gupta, K., Goel, S., & Bhatia, P. (2020).

- Intellectual Capital and Profitability: Evidence from Indian Pharmaceutical Sector. *Vision*, 24(2), 204-216.
- Gupta, N. (2020). A Study on the Effect of Working Capital Management on the Profitability of the Indian Pharmaceutical Companies. *Purakala with ISSN 0971-2143 is an UGC CARE Journal*, 31(4), 579-591
- Hamad, M. and Tarnoczi, T. (2021). An Efficiency Analysis of Companies Operating in the Pharmaceutical Industry in the Visegrad Countries. *Intelektine Ekonomika – Intellectual Economics*, 15(2), pp 131-155. <https://doi.org/10.13165/IE-21-15-2-07>
- Huang, L., Xu, F.M. and Liu, H.R. (2020) Emotional Responses and Coping Strategies of Nurses and Nursing College Students during COVID-19 Outbreak. medRxiv. <https://doi.org/10.1101/2020.03.05.20031898>
- Ismayilzade, A. A., Guliyeva, S., Teymurova, V., Azizova, R., and Chinara, A. (2021). The Impact of COVID-19 on the Quality of Human Capital for the Economic Development of Azerbaijan. *Journal of Eastern European and Central Asian Research*, 8(1) pp. 26-39. <http://dx.doi.org/10.15549/jeecar.v8i1.639>
- Jafaridehkordi, H., & Rahim, R. A. (2014). Intellectual capital and investment opportunity set. *European Online Journal of Natural and Social Sciences*, 3(4), 1030-1041. Retrieved from <http://european-science.com>
- Joshi, M., Cahill, D., and Sidhu, J. (2012). Intellectual capital and financial performance: an evaluation of the Australian financial sector. *Journal of Intellectual Capital*. 14(2), pp. 264-285. <https://doi.org/10.1108/14691931311323887>
- Kaliyeva S., Baisalova B. (2019) Agile methodology of human capital management, *The Journal of Economic Research & Business Administration*, Al-Farabi Kazakh National University
- Kamath, G. B. (2008). Intellectual capital and corporate performance in Indian pharmaceutical industry, *Journal of Intellectual Capital*, 9(4), pp. 684-704. <https://doi.org/10.1108/14691930810913221>
- Kanchana, N., & Raja Mohan, R. R. (2017). A review of empirical studies in intellectual capital and firm performance. *Indian Journal of Commerce & Management Studies*, 8(1), 52-58. <https://doi:10.18843/ijcms/v8i1/08>
- Kehelwalatenna, S. (2016). Intellectual capital performance during financial crises. *Measuring Business Excellence*, 20(3), pp. 55-78. <https://doi.org/10.1108/MBE-08-2015-0043>
- Khalique, M., & Isa, A. H. (2015). Impact of intellectual capital on the organizational performance of airline industry in Malaysia. In N. Ray, D. Das, S. Chaudhuri, & A.Ghosh (Eds.), *Strategic infrastructure development for economic growth and social change* (pp. 38-50). Hershey, PA: IGI Global. <https://doi:10.4018/978-1-4666-7470-7.ch004>
- Kozera-Kowalska, M. (2017) Intellectual capital in creating added value of agricultural enterprises. 2017, pub. University of Life Sciences in Poznań, Poznań. Permanent link: <http://www.up.poznan.pl/mkozera/Source/Publikacje/KIwTWDPR.pdf> (accessed 18 June 2018)
- Kozera-Kowalska, M., and Baum, R. (2018). Measurement of Intellectual Capital in Agricultural Enterprises: A Case Study in Poland. *Proceedings of the 10th Economics & Finance Conference, Rome*, pp 209-220. <https://doi.org/10.20472/EFC.2018.010.015>
- Kraemer, H., & Blasey, C. (2016). Correlation coefficients. In *How many subjects? Statistical power analysis in research* (pp. 62-72). London, England: Sage. <https://doi:10.4135/9781483398761.n5>
- Kravchenko A.I. History of management: Proc. allowance for university students. M.: Academic Project, 2002. 560s.
- Lakshmi, S., & Mohideen, M. A. (2013). Issues in reliability and validity of research. *International Journal of Management Research and Reviews*, 3(4), 2752-2758. Retrieved from <http://ijmrr.com> .
- Largest airports and airlines in Kazakhstan - Worlddata.info
- Li, G., Luo, Z., Anwar, M., Lu, Y., Wang, X., Liu, X. (2020). Intellectual capital and the efficiency of SMEs in the transition economy China; Do financial resources strengthen the routes? 15(7). <https://doi.org/10.1371/journal.pone.0235462>
- Mention, A.-L. (2012). Stewart, (2002) The

- impact of innovation on performance in services: Disentangling effects through the lenses of intellectual capital. Proceedings of the 4th European Conferences on Intellectual Capital, 294-302. Retrieved from <http://www.academic-conferences.org>
- Mention, A.-L., & Bontis, N. (2013). Intellectual capital and performance within the banking sector of Luxembourg and Belgium. *Journal of Intellectual Capital*, 14, 286-309. <https://doi:10.1108/14691931311323896>
- Mohamed Ali Hedhili, S. Boudabbous (2021) The role of career development in the relationship between project-based organization and human resource management: evidence from Tunisia. *International Review of Management and Marketing*. <https://DOI:10.32479/IRMM.11416>
- Morariu, C. M. (2014). Intellectual capital performance in the case of Romanian public companies. *Journal of Intellectual Capital*, 15(3), pp. 392-410. <https://doi.org/10.1108/JIC-05-2014-0061>
- Nadeem, M., Gan, Ch., and Ngyuen, C. (2016). Intellectual Capital and Firm Performance: Static or Dynamic Estimation: Evidence from the UK. *European Conference on Intangibles and Intellectual Capital*, pp. 178-185.
- Newton, R. R., & Rudesta, K. E. (2013). *Your statistical consultant: Answers to your data analysis questions* (2nd ed.). Thousand Oaks, CA: Sage.
- Ovechkin, D. V., Romashkina, G. F., and Davydenko, V. A. (2021). The Impact of Intellectual Capital on the Profitability of Russian Agricultural Firms. *Agronomy*, 11, 286. <https://doi.org/10.3390/agronomy11020286>
- Papikova L., Papik M., (2022). Intellectual capital and its impacts on SMEs profitability during COVID-19 pandemic, *Journal of Eastern European and Central Asian research*, Vol.9 No.3 (2022), DOI: <http://dx.doi.org/10.15549/jeecar.v9i3.894>
- Parast, L. Z. D., Delkhak, J., and Jamshidi, E. (2013). The Study of Intellectual Capital and Earnings in the Tehran Stock Exchange, *European Online Journal of Natural and Social Sciences*, 2(3), pp. 3251-3260.
- Pulic, A. (1998) Measuring the performance of intellectual potential in knowledge economy, paper presented at the 2nd World Congress on Measuring and Managing Intellectual Capital. 1998, McMaster University, Hamilton.
- Pulic, A. (2000) VAIC-An Accounting Tipp for IC Management. 2000. Permanent link: <http://www.measuring-ip.at/papers/ham99txt.htm> (accessed 18 June 2018).
- Pulic, A. (2004). Intellectual capital - Does it create or destroy value? *Measuring Business Excellence*, No.8(1), pp.62-68. <https://doi:10.1108/13683040410524757>
- Puth, M. T., Neuhauser, M., & Ruxton, G. D. (2015). Effective use of Spearman's and Kendall's correlation coefficients for association between two measured traits. *Animal Behaviour*, 102, 77-84. <https://doi:10.1016/j.anbehav.2015.01.010>
- R. Turner, M. Huemann, A. Keegan (2008) Business, Human resource management in the project-oriented organization: Employee well-being and ethical treatment. *International Journal of Project Management*. <https://DOI:10.1016/J.IJPROMAN.2008.05.005>
- Reio, T. G. (2016). Nonexperimental research: Strengths, weaknesses and issues of precision. *European Journal of Training and Development*; Limerick, 40, 676- 690. <https://doi:10.1108/EJTD-07-2015-0058>
- Relich, M., Witkowski, K., Saniuk, K., & Kuźdowicz, P. (2014, October). Measuring intellectual capital in the context of new product development. Paper presented in ECIC2014-Proceedings of the 6th European Conference on Intellectual Capital: ECIC 2014. Reading, UK: Academic Conferences & Publishing International.
- Ren, S. and Song, Z. (2021). Intellectual capital and firm innovation: incentive effect and selection effect, *Applied Economics Letters*, 28(7), pp. 617-623. 28(7), pp. 617-623. <https://doi.org/10.1080/13504851.2020.1767281>
- Rodchenko, V., Rekun, G., Fedoryshyna, L., Roshchin, I., and Gazarian, S. (2021). The Effectiveness of Human Capital in the Context of the Digital Transformation of the Economy: the Case of Ukraine. *Journal of*

- Eastern European and Central Asian Research, 8(2) pp. 26-39.
<http://dx.doi.org/10.15549/jeecar.v8i2.686>
- Salonius, H., & Käpylä, J. (2013). Exploring the requirements of regional knowledge-based management. *Journal of Knowledge Management*, 17, 583-597.
<https://doi:10.1108/JKM-03-2013-0106>
- Santos-Rodrigues, H., Dorrego, P. F., & Jardon, C. F. (2010). The influence of human capital on the innovativeness of firms. *The International Business & Economics Research Journal*, 9(9), 53-63.
<https://doi:10.19030/iber.v9i9.625>
- Shawtari, F. A., Saiti, B., Mohamad, M. H. S., & Rashid, H. M. A. (2017). Does intense monitoring matter? A quantile regression approach. *Borsa Istanbul Review*, 17(2), 75-85. Retrieved from
<http://www.elsevier.com/journals/borsa-istanbul-review/2214-8450>
- Skandia. (1999). *Skandia Annual Report 1998*. Davis Junction, IL. Retrieved from
<http://www.skandia.com/financials/pdfs/e9712Human.pdf>
- Stan Garfield, (2019). What is the relationship between structural capital and knowledge management?
- Sutherland, Jeff; Schwaber, Ken. "The Scrum Guide". *Scrum Guides*. Retrieved 12 September 2014.
- Uatkhanov Y. (2016). *Kazakh Airlines Overview Shows Four Major Airlines Dominating Market*. *The Astana Times Journal*.
- Uteuliyev Mukhammed Ali (2018) Satisfaction - Focused on Comparison of Kazakhstan Airlines and non-Kazakhstan Airlines. *Journal of the Aviation Management Society of Korea* 16(3):23-37
<https://DOI:10.30529/amsok.2018.16.3.002>
- Vishnu, S., & Gupta, V. K. (2014). Intellectual capital and performance of pharmaceutical firms in India. *Journal of Intellectual Capital*, 15(1), 83-99.
- Volodina, A. S. Comparative characteristics of Japanese, American and European management / 2010. - No. 1-2 (13). - T. 1. - S. 173-180. — URL:
<https://moluch.ru/archive/13/1097>
- Xu, J., and Liu, F. (2020). The Impact of Intellectual Capital on Firm Performance: A Modified and Extended VAIC Model. *Journal of Competitiveness*, 12(1), pp. 161–176.
<https://doi.org/10.7441/joc.2020.01.10>
- Xu, J., and Wang, B. (2019). Intellectual capital and financial performance of Chinese agricultural listed companies. *Custos e Agronegocio*, 15(1), 273-290.
<https://doi.org/10.7441/joc.2020.01.10>
- Zhang, Y., Z. Jin, and M. Sikand, 2021: The top-of-atmosphere, surface and atmospheric cloud radiative kernels based on ISCCP-H datasets: Method and evaluation. *J. Geophys. Res. Atmos.*, 126, no. 24, e2021JD035053,
<https://doi:10.1029/2021JD035053>

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