



# **MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM**

## **Examining the Relationship between Cultural Intelligence and Management Competencies in a Multicultural Context**

Theses of the PhD Dissertation

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# 1. WORK BACKGROUND AND OBJECTIVES

In the world, and of course in Hungary, working in a multicultural environment is becoming increasingly common, and the cooperation of workers from different cultures is increasingly necessary. Companies aim to find and employ the right people for different jobs, but cooperation is also necessary for them to work effectively. Various empirical studies have shown that groups of workers with higher levels of cultural intelligence are more successful in working together in a multicultural environment (EARLEY & ANG 2003). There may also be a place for developing cultural intelligence in education and corporate training. The aim is to demonstrate the paramount importance of cultural intelligence for managers as well as employees, and to find the most effective ways to develop cultural intelligence. The longer-term aim is to develop appropriate methods for developing cultural intelligence and to develop and recommend intercultural training for multicultural companies.

In my research, I sought answers to several questions, which I briefly detail below.

*Q1. How can cultural intelligence be most effectively developed?*

I provide a detailed history, components, characteristics, and measurement of cultural intelligence research in the literature, but the focus of my research is on which elements of CQ are most impactful in the early 21st century. One of the most important questions for me was how to improve the measure of cultural intelligence.

*Q2. To what extent does higher cultural intelligence have a positive impact on either your work or private life?*

The biggest challenge of the labour market in our globalised world is to find the most suitable, talented, and qualified employees, regardless of nationality, citizenship, cultural background; this is most true for multi- and transnational companies, but if we look at the domestic labour market, we see that there is already a diverse workforce.

*Q3. Are the perceptions and effectiveness of leaders of multicultural groups better if they have higher cultural intelligence?*

The role of managers - whether senior or middle managers - in corporate effectiveness and success is research-proven, the exploration, importance and relevance of managerial competencies is present in management training, and they are an integral part of selection and management training in companies.

In a multicultural environment, however, the study of these competencies and leadership skills is still in its infancy: the advantages and disadvantages of cross-cultural differences are not yet widely understood, which is why it is important to measure and develop cultural intelligence among managers.

*Q4. What is your staff's view of multicultural workplaces? What influences their opinion?*

The daily challenge in the labour market is to ensure that employees perform to the best of their ability in the workplace, and this is greatly influenced by how comfortable they feel in the workplace environment, which can be affected either negatively or positively by working with colleagues/managers from a foreign culture.

*Q5. What is the relationship between intercultural competence and cultural intelligence?*

On the one hand, intercultural competence and cultural intelligence overlap, and on the other hand, new elements are emerging: the results of competence studies have been present in academia since the end of the 20th century, while CQ is a product of the 21st century.

Figure 1 shows the process of examining the research questions.

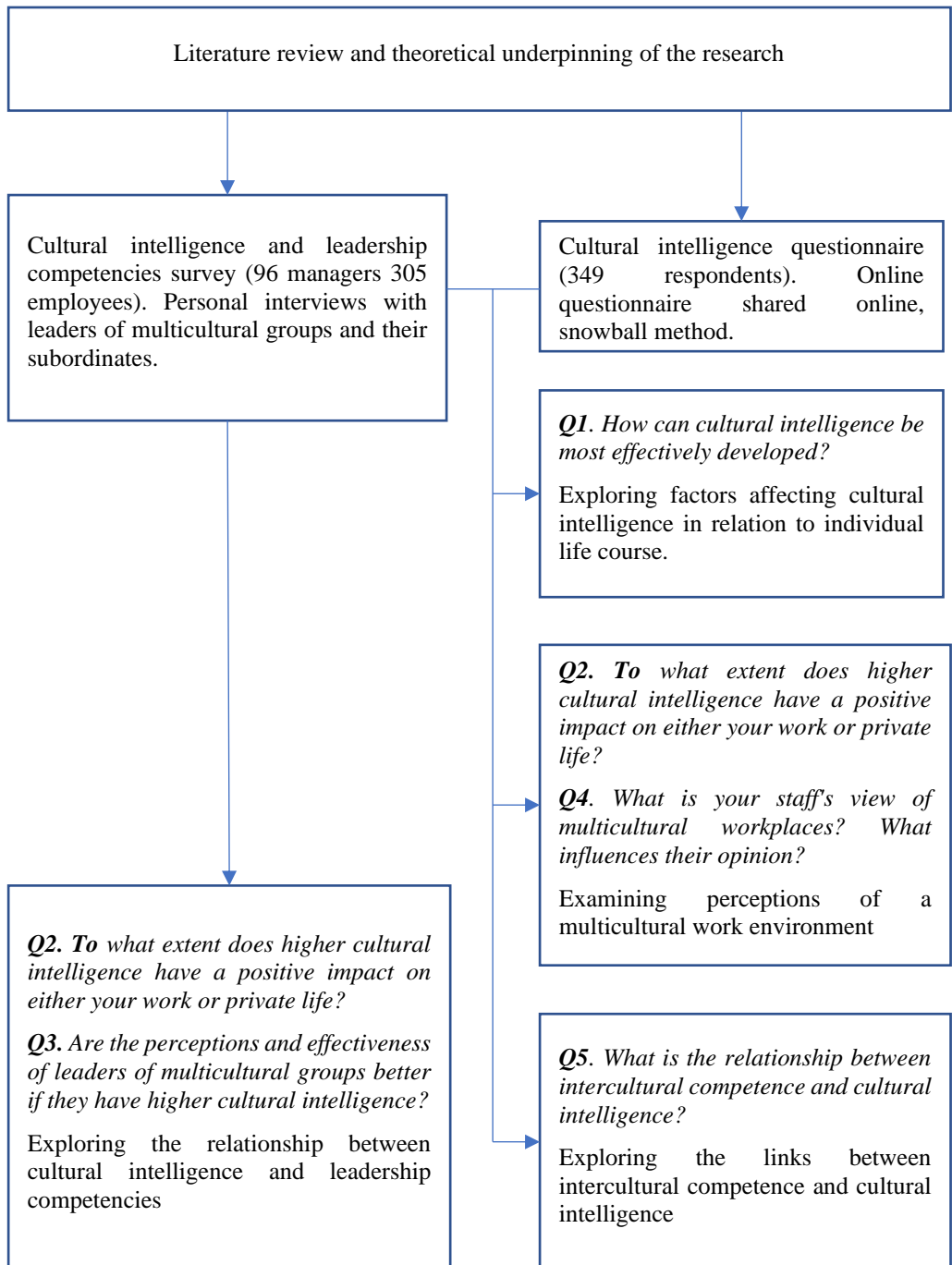


Figure 1: Flowchart of research questions.  
Own source.

From a scientific point of view, I expected the results of empirical research to show the relationship between cultural intelligence and management competencies. In order to adapt to a multicultural environment, to fit in, and to enhance creativity and performance, I pointed out the competencies that can (and should) be developed, which have a strong influence on the above-mentioned trinity.

From a practical point of view, the results of the research can be used to develop multicultural subjects and training courses that can be integrated into university studies, and to support the importance of multicultural development in the corporate environment.

## **2. MATERIAL AND METHOD**

In order to answer my research questions, I have grouped the empirical studies around four hypotheses, which I will answer using different methods described later in this chapter. After describing the hypothesis formulations and hypothesized outcome expectations, I will describe the research methodology. I describe the process of data collection, the design of the questionnaires used for the research, and the steps involved in their processing. I conclude by presenting the samples.

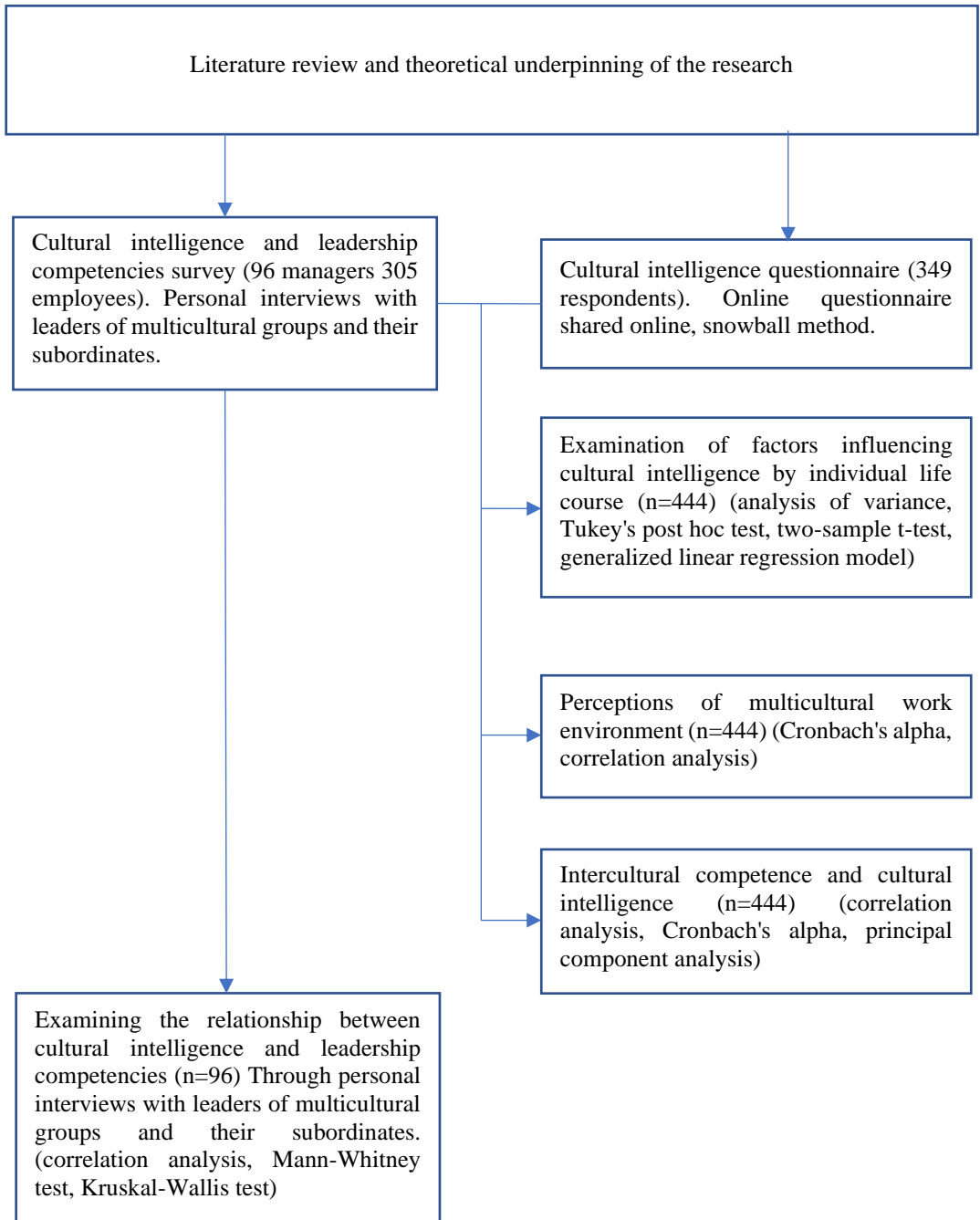
### **2.1. Hypotheses**

- H1** Intercultural experiences in one's life course contribute significantly to higher levels of cultural intelligence (CQ).
- H2** People with higher cultural intelligence have a more positive perception of multicultural work environments.
- H3** Intercultural competence elements have a positive impact on the level of cultural intelligence (CQ).
- H4** Cultural intelligence (CQ) has a stronger influence on management competence (MC) than the socio-demographic characteristics of the leader (age, education, gender, whether the person is Hungarian or foreign) or the role (position) in the organisation.

Hypotheses H1, H2 and H3 are intended to provide a foundation for the research, in which I analyse the interrelationship and interaction of three concepts. H4 is a comparison of management competencies (MC) and cultural intelligence (CQ) scores based on managerial and subordinate characteristics to show the relationship between the two categories.



## 2.2. Research method



*Figure 2: The research process.*

Figure 2 shows the steps of my empirical research, the samples obtained, and the methods used to analyse the data.

### **2.2.1. Method of data collection**

The population of my study are managers who have at least one different nationality in their team.

To reach the managers leading the multicultural groups that were the basis of the research, I asked for the help of the university's master's students, especially those on correspondence courses, because they made it easier to establish contacts with a wider range of companies. In the questionnaire survey, I first trained the students on the correct way to fill in the questionnaire and how to select the right subjects. A paper questionnaire was used, the part of which assessing managerial competence was sent to SHL Hungary Ltd. for processing, while the part assessing cultural intelligence was entered into a database.

The survey is not representative. I surveyed managers whose team included at least one subordinate of a different nationality from the manager. The sampling was an undirected, so-called convenience sampling, i.e. I could only survey managers and their subordinates in the multicultural group of companies reached by my students, due to the limited research frame. As students were involved in the survey, I felt it necessary to ensure the validity of the data. One way of doing this was to check that the research criteria were met for each completed questionnaire.

Data collection started in spring 2018: 5 managers and 16 subordinates completed the pilot questionnaire. After correcting some misunderstandings and gaps in the matching of questions and answers, the final questionnaire was completed in September 2018 and data was collected until the end of May 2019. I checked the returned completed paper questionnaires for compliance with the criteria and then entered the responses into a database on a rolling basis from autumn 2019. The resulting database was suitable for further analysis. The analysis of the part of the questionnaires on management competencies was carried out at SHL Hungary in 2020.

In my research, I used an additional questionnaire survey I had prepared, which, although not representative, included data from 349 respondents. The sampling was snowball method using the internet. Data collection took place between 2017 and 2018.

### **2.2.2. Description of the main questionnaire**

I prepared two questionnaires, one for managers and one for subordinates related to their manager, which have common and different parts. The sections on demographics and perceptions of multicultural environment are identical, and the questions on cultural intelligence, management competencies and intercultural competence were exclusively for managers, with managers completing them for themselves and subordinates completing them for their manager.

### **2.2.3. Structure of the questionnaires**

#### ***Questionnaires used for the empirical study "Cultural Intelligence (CQ) and Management competencies (MC)"***

For the empirical study of cultural intelligence (CQ) and management competencies (MC), there was a separate questionnaire for the assessment of management competencies, which was the IMC instrument questionnaire provided by SHL Hungary Ltd. In the questionnaire, 160 statements describing behaviours are to be answered, grouped in groups of four, divided into 40 groups. Answers are given in blocks, first answering each statement on a scale of 1 to 5 as to how characteristic it is of them, then selecting the most and least characteristic behaviour from the group of four. The two types of response are scored separately and result in two profiles: 'normative' (compared to others) and 'ipsative' (strength relative to self) on a scale of 1-10 for the 16 IMC competencies.

I used the normative values in my research (KLEIN & KLEIN 2020). The same questionnaire was completed by managers for themselves, and by their subordinates for the manager. For the hypotheses of cultural intelligence, intercultural competence and perception of workplace, I collected the responses in a Google Forms questionnaire. There was a separate questionnaire for managers as well as for subordinates.

In the demographics section, I asked questions about the respondent in both versions, year of birth, gender, nationality, highest level of education, years of work experience, for managers their position, whether they had ever worked in a multicultural workplace, whether they had ever lived abroad, their native language, how many languages they spoke.

The next part of the questionnaire included five questions asking respondents for their own views on multicultural workplaces.

To assess intercultural competence, I formulated questions based on the model of Rudnák (2010), for which I used a 5-point scale. Managers answered these questions for themselves, and subordinates answered them for the manager they were assessing.

The Cultural Intelligence Scale is a reliable measure of a person's ability to cope effectively in intercultural situations. The scale is a 20-question, 4-factor series of questions corresponding to 4 parts of the CQ, with questions covering the motivational, cognitive, metacognitive and behavioural CQ groups.

Results can be calculated and interpreted by factor and in aggregate. The scale was developed to test Earley and Ang's 2003 concept and validity of cultural intelligence (<http://www.culturalq.com>). Managers answered these questions for themselves, and subordinates answered them for the manager they assessed.

Since I wanted to use the Cultural Intelligence Scale for the empirical assessment of the dissertation, it was essential to translate it into English. The process of translating the questionnaire into Hungarian was as follows: first, I translated the questions of the questionnaire into Hungarian, and then I asked two professionals with appropriate English language qualifications (Master's degree in English/American Studies, Master's degree in English Translation) to translate the Hungarian questions back into English. I then asked a native English-speaking professional (Rome Business School) to compare the original English questions with the Hungarian questions translated back from Hungarian, and based on his feedback, I finalised the Hungarian questions.

To assess managerial competencies, I used the SHL Inventory of Management Competencies (IMC). This questionnaire can also be used to predict management competencies and to identify areas for improvement (<https://www.shl.hu/en/tests-tools/personality-questionnaires/competency-questionnaires/inventory-of-management-competencies-imc-for-managers-and-graduates>). SHL<sup>1</sup> provided me with the results of the questionnaires after analysing the completed questionnaires: scoring each competency from 1 to 10.

### ***Questionnaire for the empirical research on "Cultural Intelligence (CQ)"***

For the "Cultural Intelligence (CQ)" survey, all respondents completed an online questionnaire that was presented on Google Forms. This questionnaire included demographics, perception of multicultural workplace, cultural intelligence scale section.

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<sup>1</sup> The processing of the questionnaires on leadership competencies for my doctoral research was carried out on my behalf by SHL Hungary, led by Dr. Sándor Klein.

The demographic section includes questions on the age, gender, nationality, highest level of education, work experience, international experience and language skills of the respondent. For the perception of the multicultural workplace, I asked five questions in which the respondent could express his/her opinion on a Likert scale. In the self-assessment section, I assessed the respondent's level of intercultural competence and cultural intelligence on two separate scales.

### 2.3. Methodology used to process the questionnaire analysis

In the empirical study of "Cultural Intelligence (CQ) and Management competence (MC)", the managers and subordinates were interviewed on paper, the SHL IMC tool provided me with a printed questionnaire for use, and the CQ questionnaire was given to the respondents in printed form. The completed IMC questionnaires were sent to SHL, the results of which were returned in the form of individual reports, and finally their values were entered into Excel tables.

I created tables from the CQ questionnaires using Google Forms. Once the responses of both managers and subordinates were collected, I assigned a code to the managers and assigned the subordinates to them.

Table 3 lists the statistical methods I used on the samples I obtained from the questionnaires (Table 3):

*Table 3: Statistical methods used to process the empirical research data*

Investigation questions	Investigation objectives	Analysis method
CQ scale questions and the intercultural competence elements	Testing variables for suitability for factor analysis	KMO and Bartlett test
Checking the validity of the CQ scale	Group questions	Principal component analysis
Grouping of intercultural competence elements	Grouping of intercultural competence elements	Principal component analysis
CQ scale questions, questions on multicultural workplace perceptions	Checking the internal consistency of groups of questions	Cronbach's alpha value
CQ values and age, education level, work experience, number of languages spoken, number of countries,	To analyse the difference in means between groups	Analysis of variance
CQ values and age, education level, work experience, number of languages spoken, number of countries,	For post-analysis of the difference between group means	Tukey's post hoc test

<b>Investigation questions</b>	<b>Investigation objectives</b>	<b>Analysis method</b>
CQ values and gender, foreign language skills, living abroad, multicultural work experience	Examining the difference between the means of two groups	Two-sample t-test
CQ average and Have you ever lived abroad?, Speak a foreign language?, Do you work or have you ever worked in a multicultural workplace?, Age groups, Highest level of education, Work experience	Analysis of averages of different types of groups	Generalised linear regression model
Intercultural competence items and cultural intelligence dimensions and average, cultural intelligence dimension values and average and managerial competence dimensions,  Leader age and leadership competency values, leader work experience and leadership competency values.	Testing the strength of the relationship between two scalar variables	Correlation analysis
Management competencies grouped by gender and nationality	Normal distribution check	Kolmogorov-Smirnov trial
Leader gender and leadership competency values, leader nationality and leadership competency values.	Analysis of the difference between group means for ordinal variables with non-normal distributions	Mann-Whitney test
Age of leaders grouped by age and leadership competency values  Managers' work experience grouped and managerial competence values  Manager's position and values of managerial competence  Manager's education and managerial competence values	Comparing values from more than two independent samples	Kruskal-Wallis test

To answer the hypotheses, I processed the data in SPSS version 26. Principal component analysis was conducted to check the validity of the cultural intelligence scale, to group the questions and to group the intercultural competence items.

I used KMO and Bartlett's test to check whether these items would be suitable to perform principal component analysis. Cronbach's alpha was used to test the internal consistency of the cultural intelligence scale questions and the job perception questions separately. I used analysis of variance to compare cultural intelligence averages by grouping managers by age, education level, work experience, number of languages spoken, number of countries, and more than two groups. I used Tukey's post hoc test for post-analysis of the same groups. Using a two-sample t-test, I analysed the cultural intelligence scores of managers in groupings where there were two groups, such as gender, whether they lived abroad, whether they spoke a foreign language. I used a generalised linear regression model to examine the groups already analysed by the two previous methods (analysis of variance and two-sample t-test) together, when I also looked at different types of groups together. I used correlation analysis to examine the relationship between respondents' intercultural competence and cultural intelligence, and the relationship between managers' cultural intelligence and their managerial competencies. I used Kolmogorov-Smirnov test to check the normal distribution of the values of managerial competence, cultural intelligence values. I used Mann-Whitney test to analyse the difference between group means for ordinal variables with non-normal distribution in the analysis of managerial competencies of managers. I used the Kruskal-Wallis test to compare the values of more than two independent samples for leadership competency scores.

## **2.4. Presentation of samples**

For the doctoral thesis, I use data from two empirical (questionnaire) studies, which consist of:

1. "Cultural intelligence (CQ) and managerial competencies" empirical study - database of 401 participants (96 managers 305 subordinates)

In my study, I measured the cultural intelligence and management competence (MC) of leaders of multicultural groups, based on their own responses and those of their subordinates, and compared them to explore their interrelationships. My aim was to demonstrate a significant relationship between CQ and MC.

2. "Cultural Intelligence (CQ)" empirical study - 349 key managers and subordinates

I analysed the relationship between competencies for integration in intercultural environments and cultural intelligence.

I also sought to find out what other factors might contribute to achieving higher cultural intelligence, and how respondents' perceptions of multicultural work environments vary across demographic distributions, experiences and studies. I use data from this research to support my hypotheses H1 and H3.

To prove the hypotheses, I use the results of both studies, but for each hypothesis I indicate which data I am analysing.

### 2.4.1. Aggregated demographics

Demographic data for all samples are as follows (Table 1):

*Table 1: Summary of samples from empirical studies*

	"Cultural intelligence (CQ) and management competence" (n=401)	"Cultural Intelligence (CQ)" (n=349)	Aggregate sample <sup>2</sup> (n=444)
<b>Sex</b>			
Male	55% (219)	43% (149)	50% (222)
Female	45% (182)	57% (200)	50% (222)
<b>Age</b>			
17-30	38% (151)	30% (105)	27% (119)
31-40	34% (137)	32% (110)	32% (141)
41-50	18% (73)	28% (99)	29% (131)
51+	10% (40)	10% (35)	12% (53)
<b>Position</b>			
Manager	24% (96)	-	-
Subordinate	76% (305)	-	-
<b>Education</b>			
High School	15% (59)	21% (75)	19% (84)
BSc/Ba	49% (195)	40% (139)	38% (170)
MSc/Ma	34% (137)	35% (121)	38% (170)
Ph.D.	2% (10)	4% (14)	5% (20)
<b>Multicultural workplace experience</b>			
Have	92% (370)	68% (239)	75% (333)
None	8% (31)	32% (110)	25% (111)
<b>Nationality</b>			
Hungarian	53% (212)	75% (261)	66% (292)
Foreign	47% (189)	25% (88)	34% (152)

<sup>2</sup> The sample used for hypothesis H2 is the sample of leaders assessed in the "Cultural Intelligence (CQ) and Leadership Competencies" research together with the samples from the "Cultural Intelligence (CQ)" research. Of the original 96 leaders, 95 had incomplete data and were usable.



	"Cultural intelligence (CQ) and management competence" (n=401)	"Cultural Intelligence (CQ)" (n=349)	Aggregate sample <sup>2</sup> (n=444)
<b>Do you speak a foreign language?</b>			
Yes	97% (387)	89% (311)	94% (404)
No	3% (14)	11% (38)	6% (40)
<b>Experience abroad</b>			
Have	57% (230)	49,6% (173)	57% (254)
None	43% (171)	50,4% (176)	43% (190)
<b>Work experience in years</b>			
	19% (78)	24% (82)	19,5% (86)
0-4	33% (132)	18% (63)	19,5% (86)
5-10	16% (63)	14% (49)	14% (63)
11-15	11% (43)	23% (81)	22% (99)
16-20	21% (85)	21% (74)	25% (110)
21+			

### 3. MATERIAL AND DISCUSSION

#### 3.1. Cultural intelligence and the individual life path

##### *H1. Intercultural experiences in one's life course contribute significantly to higher levels of cultural intelligence (CQ).*

To analyse the effects of individual life experiences, I first divided the factors that I hypothesise may influence cultural intelligence into two groups. The demographic factors included age, level of education, and years of work experience, while the intercultural factors included the number of languages spoken, multicultural work experience and the number of countries in which the person has lived. For the hypothesis testing, I used the managerial database of my doctoral research (95 persons)<sup>3</sup>, on the one hand, and on the other, the CQ research database (349 persons), i.e., a sample of 444 persons.

##### *Confirm/refute hypothesis H1*

Here in Table 2 I summarise the methods and results of the tests used to test hypothesis H1.

*Table 2.: Results of the H1 hypothesis test (n=444)*

Factor	Result	MOT CQ	COG CQ	MC CQ	BEH CQ	CQ
<b>Age group</b>	Significant relationship with the motivational CQ dimension	<b>sign. diff.</b>	n.s.	n.s.	n.s.	n.s.
<b>Education</b>	Significant relationship with the metacognitive CQ dimension	n.s	n.s	<b>sign. diff.</b>	n.s	n.s
<b>Work experience</b>	Significant relationship with motivational CQ dimension and CQ mean	<b>sign. diff.</b>	n.s	n.s	n.s	<b>sign. diff</b>

<sup>3</sup> One manager's survey had incomplete data

<b>Factor</b>	<b>Result</b>	<b>MOT CQ</b>	<b>COG CQ</b>	<b>MC CQ</b>	<b>BEH CQ</b>	<b>CQ</b>
<b>Does he speak a foreign language</b>		<b>t=0,527*</b>	<b>t=3,771*</b>	<b>t=1,234*</b>	n.s.	<b>t=1,925*</b>
<b>Number of languages spoken</b>	Significant relationship with cognitive, metacognitive CQ dimensions and CQ mean	n.s.	<b>sign. diff.</b>	<b>sign. diff.</b>	n.s.	<b>sign. diff.</b>
<b>Lived abroad</b>	Significant relationship with three dimensions and CQ mean	<b>t=7,385*</b>	<b>t=7,361*</b>	<b>t=5,937*</b>	n.s.	<b>t=6,668*</b>
<b>Number of countries</b>	Significant relationship with three dimensions and CQ mean	<b>sign. diff.</b>	<b>sign. diff.</b>	<b>sign. diff.</b>	n.s.	<b>sign. diff.</b>
<b>Multicultural work environment experience</b>	Significant relationship with three dimensions and CQ mean	<b>t=6,906*</b>	<b>t=5,912*</b>	<b>t=5,123*</b>	n.s.	<b>t=5,951*</b>

*n.s - not significant*

*significant association - there is a significant association*

*\* 0.01 significance level*

The results of the studies conducted have clearly shown that cultural intelligence can be most influenced and enhanced by multicultural experiences.

Statistically, I proved that my hypothesis in the first hypothesis (Intercultural experiences in one's life course contribute significantly to higher levels of cultural intelligence (CQ)) was true for the study sample.

### **3.2. The multicultural work environment**

***H2: People with higher cultural intelligence have a more positive perception of multicultural work environments.***

To assess the multicultural workplace, I used the following questions:

1. Employees are usually wary of foreign managers.
2. The manager's nationality is not important. He/she needs to be sufficiently professional and interpersonally competent for his/her position.
3. It takes less effort for managers to become accepted if the manager and their subordinates are of the same nationality.
4. In multicultural workplace managers are more likely to judge their subordinates by their performance.
5. In a multicultural workplace equal opportunity is taken more seriously.

***What the questions used aim to achieve***

In order to test the hypothesis, I needed to find out what respondents thought about how much others fear a foreign leader. It is common belief that we have certain reservations and fears about the unknown, including foreigners. In what follows, I contrast professionalism or other factors, thereby asking whether respondents might give equal weight to other nationalities in their responses. The micro-environment in the workplace, the impact of direct contacts on each other, is well known, and so the manager's effort to gain acceptance is not indifferent. Performance-based perceptions and equal opportunities are two key qualities of a multicultural environment, hence my assessment of respondents' views on these subjects.

***Perceptions of the multicultural workplace and cultural intelligence***

In 444 cases, I also had cultural intelligence scores, and here I looked at the correlation between CQ levels and responses to questions. In these studies, I used the original scores for the first and third questions, not the reverse.

*Table 3: Correlation study between CQ scores and responses to questions (n=444)*

	<b>Q1 – Are vary of bosses of other nationalities.</b>	<b>Q2 No matter your nationality</b>	<b>Q3 Nationality of manager and employee</b>	<b>Q4 Perception by performance</b>	<b>Q5 Equal opportunities</b>
<b>Motivational CQ</b>	-0,229**	0,129**	-0,151**	0,051	0,137**
<b>Cognitive CQ</b>	-0,155**	0,009	0,017	0,022	0,125**
<b>Metacognitive CQ</b>	-0,173**	0,065	-0,064	0,002	0,166**
<b>Behavioural CQ</b>	-0,100*	0,080	-0,017	0,087	0,037
<b>CQ</b>	-0,205**	0,086	-0,062	0,050	0,147**
**. Correlation confirmed at 0.01 significance level.					
*. Correlation confirmed at 0.05 significance level.					

Table 3 shows that for two questions there is a significant relationship between the level of cultural intelligence and the answers to the questions. These questions are "Employees are generally afraid of bosses of other nationalities" ( $r=-0.205$ ,  $p<0.001$ ), in which I asked about the respondent's perception of how others relate to foreign managers, and "In a multicultural environment, there is much more attention to equal opportunities" ( $r=0.147$ ,  $p=0.002$ ), in which I asked about their experiences of equal opportunities.

### ***Confirm/refute hypothesis H2***

My hypothesis (*People with higher cultural intelligence have more positive perceptions of multicultural work environments*) is partially confirmed, although very weak, but the correlation is statistically significant for two out of five questions.

### **3.3. Intercultural competence (IC) and cultural intelligence (CQ)**

#### ***H3. Intercultural competence elements have a positive impact on the level of cultural intelligence (CQ).***

In my hypothesis, I examine the relationship between intercultural competence elements and cultural intelligence. I want to prove to what extent the level of intercultural competence elements influences the level of cultural intelligence.

To test the hypothesis, I used two databases, analysing the values of 95 managers and 349 respondents, 444 in total. To support the hypothesis, I conducted three studies. In the first, I conducted a correlation study between intercultural competence items and cultural intelligence dimensions.

Based on the results obtained, I determined the three most important competence items per dimension (only two items for the Behavioural CQ dimension), calculated their averages and compared these averages with the CQ dimensions. In the second study, I calculated averages for groups of competency items grouped by the literature and compared them with the CQ dimensions. In the third study, I used factor analysis to identify groups of competency items and looked at their means in relation to the CQ dimensions.

#### ***The intercultural competence elements***

The nine elements of intercultural competence I have examined: interpersonal skills, language skills, cultural curiosity, tolerance of uncertainty, flexibility, patience and respect, cultural empathy, strong sense of self, sense of humour (RUDNÁK 2010; SCHNEIDER et al. 2014).

#### ***Cultural intelligence values***

The Cultural Intelligence Scale (CQS) uses a seven-question scale with four groups of questions. Each group of questions gives a value for one dimension, with a simple average. There are different numbers of questions in each question group, five in motivational, six in cognitive, four in metacognitive and five in behavioural. The mean of cultural intelligence is calculated as the average of the four dimensions.

### *Finding a correlation between CQ and IC*

On average, cultural intelligence has the strongest relationship with cultural intelligence for flexibility ( $r=0.353$  at the  $p<0.01$  level), language proficiency (0.327 at the 0.01 level) and cultural curiosity (0.321 at the 0.01 level).

*Table 4: Correlation between intercultural competence items and cultural intelligence dimensions (n=444)*

	Motivational CQ	Cognitive CQ	Metacognitive CQ	Behavioural CQ	CQ Average
<b>Relationship-building skills</b>	0,307**	0,142**	0,172**	0,217**	0,259**
<b>Language skills</b>	0,219**	0,373**	0,258**	0,172**	0,327**
<b>Cultural curiosity</b>	0,342**	0,261**	0,245**	0,178**	0,321**
<b>Tolerating uncertainty</b>	0,321**	0,225**	0,174**	0,097*	0,252**
<b>Flexibility</b>	0,423**	0,237**	0,254**	0,228**	0,353**
<b>Patience and respect</b>	0,280**	0,190**	0,252**	0,195**	0,288**
<b>Cultural empathy</b>	0,213**	0,173**	0,270**	0,151**	0,255**
<b>Strong sense of self</b>	0,245**	0,194**	0,244**	0,210**	0,282**
<b>Sense of humour</b>	0,204**	0,147**	0,167**	0,164**	0,214**
**. Correlation confirmed at 0.01 significance level.					
*. Correlation confirmed at 0.05 significance level.					

In Table 4 I have marked the strongest relationships by dimension in a different colour. According to this, the strongest relationships with the motivational CQ are for the items flexibility, cultural curiosity and tolerance of uncertainty, with the cognitive CQ for the items language proficiency, cultural curiosity and flexibility, with the metacognitive CQ for the items cultural empathy, language proficiency, flexibility, patience and respect, and with the behavioural CQ for the items flexibility, language proficiency and cultural curiosity.

### *Summary of hypothesis H3*

The interrelationship and interaction between intercultural competence elements and cultural intelligence and its dimensions have been clearly demonstrated.

By grouping the intercultural competence items using principal component analysis, the results of the correlation study show that the uncertainty management factor (relational skills, tolerance of uncertainty, flexibility, sense of humour) is related to the motivational CQ with the acceptance factor (patience and respect, cultural empathy, strong sense of self) with the metacognitive CQ and the desire to know factor (language skills) with the cognitive CQ, but each factor has a significant positive relationship with each of the cultural intelligence dimensions.

Hypothesis H3 (*Intercultural competence elements have a positive impact on the level of cultural intelligence (CQ)*) was confirmed.

### **3.4. The relationship between cultural intelligence and management competencies in managers**

***H4: Cultural intelligence (CQ) has a stronger influence on management competence (MC) than the sociodemographic characteristics of the leader (age, education, gender, whether the person is Hungarian or foreign) or the role (position) in the organisation.***

Of the 95 managers, 76 managers had an assessable managerial competence score from subordinates. In this hypothesis, the analyses were conducted with these cases.

The basic assumption of my research is that high levels of management competence imply good leaders, while those with high levels of CQ have higher levels of management competence, quasi better leaders.

One of the basic questions in CQ research, which came first, the chicken or the egg, has not escaped me, i.e., does management competence affect CQ or does CQ affect management competence? Multicultural environments are included in the definition of CQ, and research into cultural intelligence was launched because it was found in workplaces that, despite the best talent and the best management team being assembled, their effectiveness was below expectations. It was then that the researchers realised that there must be a factor that influences the development of leadership in a multicultural environment.

The limitation of the research: I could not interview all the managers surveyed, both of the same nationality and of different nationalities. The basic condition for the surveys was that I surveyed managers who work in a multicultural environment, and the basic condition was that they had at least 3 subordinates whose nationality was different from that of the manager.



### ***Finding a correlation between cultural intelligence and management competencies***

I performed a correlation study comparing the CQ and MC of the managers. These scores are derived from the average of the scores given by the managers' own subordinates. 76 managers had at least 3 subordinates who completed both a CQ and IMC questionnaire.

*Table 5: Correlation between managers' cultural intelligence and managerial competencies (mean of values given by subordinates) (n=76)*

	LEADER- SHIP SKILLS	PROFESSIONAL SKILLS	ENTREPRENE URIAL SKILLS	PERSONAL -ITY TRAITS
Cultural intelligence	0,459**	0,416**	0,353**	0,406**
Motivational CQ	0,427**	0,439**	0,352**	0,459**
Cognitive CQ	0,349**	0,267*	0,198	0,266*
Metacognitive CQ	0,441**	0,423**	0,315**	0,420**
Behavioural CQ	0,331**	0,267*	0,337**	0,215
**. Correlation confirmed at 0.01 significance level.				
*. Correlation confirmed at 0.05 significance level.				

Table 5 shows that, in general, no significant differences in the values of the correlations can be observed. The results show that cultural intelligence has a moderately strong correlation with management competence, with the weakest correlation with entrepreneurship ( $r=0.353$ ,  $p=0.002$ ). When I examine the results by dimension, the weakest correlation is also found for the motivational CQ with entrepreneurial competence ( $r=0.352$ ,  $p=0.002$ ), for the cognitive CQ there is no correlation at all with entrepreneurial competence, for the metacognitive CQ again entrepreneurial competence is the weakest correlate ( $r=0.315$ ,  $p=0.006$ ), while for the behavioural CQ there is no linear correlation between personality traits and management competence.

I have also analysed the results from the perspective of management competencies, looking at each column of Table 5 by column. Thus, I found that management competencies have the weakest relationship with behavioural CD ( $r=0.331$ ,  $p=0.004$ ), Professional competencies have the weakest relationship with cognitive ( $r=0.267$ ,  $p=0.02$ ) and behavioural CQ ( $r=0.267$ ,  $p=0.02$ ). Entrepreneurial skills have no significant relationship with cognitive CQ and personality traits with behavioural CQ.

## ***The relationship between management competencies and other factors***

To test the hypothesis, I analyse the following factors (Table 6):

*Table 6: Methods used for hypothesis testing (n=76)*

<b>Factor</b>	<b>Type of test</b>
Gender of the manager	Mann-Whitney test
Is the manager Hungarian or foreign	Mann-Whitney test
Age of managers grouped by age	Kruskal-Wallis test
Work experience of managers grouped by	Kruskal-Wallis test
Position of the manager	Kruskal-Wallis test
Qualifications of the manager	Kruskal-Wallis test

### *Analysis by gender of managers*

Based on the results of Mann-Whitney test (M-W=469.5, Z=-0.642, p=0.521), no significant difference between male and female managers can be demonstrated in the scores of leadership skills, professional skills (M-W=372, Z=-1.833, p=0.067) and entrepreneurial skills (M-W=372, Z=-1.833, p=0.067).

Only for personality traits is there a significant difference between the scores of male and female managers, for the Mann-Whitney test, female managers have significantly higher personality trait competencies compared to male managers.

### *Examination by origin of managers*

The Mann-Whitney test showed no significant differences between foreign and Hungarian managers can be confirmed or found in any of the measures of managerial competencies.

### *Analysis by age of managers*

Results of the Kruskal-Wallis test for (p>0.05), leadership skills (K-W=0.531, p=0.912), professional skills (K-W=2.160, p=0.540), entrepreneurial skills (K-W=0.785, p=0.853) and personality traits (K-W=3.571, p=0.312) showed no significant relationship between age groups and management competencies.

### *Examination according to the work experience of managers*

The Kruskal-Wallis test results for (p>0.05), leadership skills (K-W=3.081, p=0.544), professional skills (K-W=7.207, p=0.125), entrepreneurial skills (K-W=0.882, p=0.927) and personality traits (K-W=8.666, p=0.070) showed no significant relationship between age groups and management competencies.

### *Analysis according to the managers' position*

The Kruskal-Wallis test ( $p > 0.05$ ) ( $K-W = 4.602$ ,  $p = 0.100$ ) shows that there is no significant difference in management competencies with respect to the manager's position, nor is there a significant difference in professional competencies ( $K-W = 3.264$ ,  $p = 0.196$ ), entrepreneurial competencies ( $K-W = 0.715$ ,  $p = 0.699$ ) and personality traits ( $K-W = 4.766$ ,  $p = 0.092$ ).

### *Examination by educational level of managers*

The Kruskal-Wallis test results ( $p > 0.05$ ) (leadership ( $K-W = 1.943$ ,  $p = 0.584$ ), professional skills ( $K-W = 3.547$ ,  $p = 0.315$ ), entrepreneurial skills ( $K-W = 5.587$ ,  $p = 0.134$ ) and personality traits ( $K-W = 1.862$ ,  $p = 0.601$ )) show that none of the leadership competency scores show significant differences with respect to the educational level of the leader.

### *Evaluating the H4 hypothesis*

To support my hypothesis, in addition to examining the relationship between cultural intelligence and management competence, I looked at the extent to which other sociodemographic factors influence the value of management competence of managers. Thus, I examined whether older or younger managers, managers with more work experience, managers with higher education, managers with higher positions, male or female managers, and managers of Hungarian or foreign origin scored higher.

In Table 7 I have summarised the correlation of the different factors with management competence.

*Table 7: Summary of hypothesis H4 (n=76)*

		<b>Leadership skills</b>	<b>Professional skills</b>	<b>Entrepreneurial skills</b>	<b>Personality traits</b>
<b>CQ</b>	Significant relationship with all four management competencies	<b>0,459**</b>	<b>0,416**</b>	<b>0,353**</b>	<b>0,406**</b>
<b>Age groups</b>	No significant relationship	n.s.	n.s.	n.s.	n.s.
<b>Work experience</b>	No significant relationship	n.s.	n.s.	n.s.	n.s.
<b>Education</b>	No significant relationship	n.s.	n.s.	n.s.	n.s.
<b>Position</b>	No significant relationship	n.s.	n.s.	n.s.	n.s.

		<b>Leadership skills</b>	<b>Professional skills</b>	<b>Entrepreneurial skills</b>	<b>Personality traits</b>
<b>Sex</b>	Significant relationship between personality traits competence	n.s.	n.s.	n.s.	<b>Female managers significantly higher</b>
<b>Origin</b>	No significant relationship	n.s.	n.s.	n.s.	n.s.

Based on the results of the empirical research, my hypothesis H4 (*Cultural intelligence (CQ) has a stronger influence on management competence (MC) than the sociodemographic characteristics of the leader (age, education, gender, whether the person is Hungarian or foreign) and the role (position) in the organisation*) was confirmed.

### 3.5. Discussion of the results

My research objectives included demonstrating the paramount importance of cultural intelligence for managers, not only for employees, and finding the most effective ways to develop cultural intelligence. My more distant goals are to develop appropriate methods for developing cultural intelligence and to design and recommend intercultural training for multicultural companies.

At the beginning of this thesis, I formulated four specific research questions, which I will now answer one by one based on the results of my research.

*Q1. How can cultural intelligence be most effectively developed?*

The results of the research show that the biggest influence on cultural intelligence is intensive multicultural experience, such as living abroad, working with foreigners, and everyday encounters. It is definitely a situation in which individuals cannot avoid learning about and adapting to the culture of others.

Effective development can also only be achieved through long-term experience, reinforced by the cultural features learned during language learning or by participation in multicultural training. But these cannot be the only source of cultural intelligence development without concrete experience.

The results of my research are in line with those of Alexander et al. (2021) who similarly found that CQ training does not develop cultural intelligence if it is not accompanied by the acquisition of experience in other cultures. Similar results were also found by Raver and Van Dyne (2018) in their research on the development of cultural intelligence.

*Q2. To what extent does higher cultural intelligence have a positive impact on either your work or private life?*

In my research, I have looked at the impact of cultural intelligence from a work perspective, leaving the private life to another research. I tried to answer my question by examining two themes, one was the perception of multicultural jobs, where I found a demonstrable direct relationship between higher CQ and preference for multicultural jobs, and the workplace includes managers, for whom cultural intelligence is almost as important in their perception.

*Q3. Are the perceptions and effectiveness of leaders of multicultural groups better if they have higher cultural intelligence?*

Clearly, managers who were found to be better leaders by their subordinates were those whose cultural intelligence was higher, as was clearly shown by the leadership competency scores given to the managers.

The sub-scores of managerial competencies include planning, organisation, quality, problem solving, business acumen, creativity, innovation and strategic sense, all of which are essential for effectiveness, so it can be said that managers with higher cultural intelligence are also perceived as more effective by their subordinates.

In his 2011 book, Livermore states that a leader with higher cultural intelligence is more likely to build trust and effectively lead multicultural groups and projects, whether in a domestic or foreign environment (LIVERMORE 2011, p. 16).

Leadership cultural intelligence and leadership effectiveness was the subject of Groves and Feyerherm's research (2011), which found that the relationship between leaders' cultural intelligence and their performance as leaders is stronger in teams with greater cultural diversity. The results of the study show that the cultural intelligence of leaders contributes to the perception of leader performance in work teams that are characterised by significant cultural diversity in terms of team members.

*Q4. What is your staff's view of multicultural workplaces? What influences their opinion?*

According to respondents, people generally have a low level of fear of foreign leaders, but do not discriminate on the basis of the nationality of the leader themselves, as long as the leader has the right professional skills and is a good fit for the role.

Less likely to think that managers whose nationality is different from that of their subordinates are in a more difficult position.

Medium marks were given to questions asking about fairer performance appraisal in a multicultural environment or the perceived greater equality of opportunity in a multicultural workplace.

People with higher cultural intelligence were less likely to think that employees would be afraid of foreign managers and were more positive about equal opportunities in multicultural workplaces. I could not find any other clear influencing factor here.

*Q5. What is the relationship between intercultural competence and cultural intelligence?*

The results show a clear link between intercultural competence and cultural intelligence. Individuals who have more developed intercultural competence skills and higher levels of intercultural competence can also achieve higher levels of cultural intelligence.

Intercultural competence is a set of skills that help people to integrate more easily into foreign cultures. These are partly aptitudes, personality traits such as interpersonal skills, resilience, a sense of humour, cultural empathy, language skills and partly skills learned during our socialisation, such as tolerance of uncertainty, patience and respect, cultural curiosity and a strong sense of self.

They are either existing endowments or deep-rooted characteristics. I have assumed and found that the relationship between the two concepts is one-way, that cultural intelligence cannot be developed without basic skills, which are also of primary importance in our own culture.

I have successfully achieved both of my two immediate goals. It was clearly demonstrated that cultural intelligence is of paramount importance for leaders of multicultural groups, with significantly higher perceptions of leadership ability by subordinates of leaders who had higher cultural intelligence.

And of all the ways to develop cultural intelligence, intensive multicultural experiences have been shown to be the most effective, so close, frequent contact with people from foreign cultures is essential to significantly increase cultural intelligence, which can be achieved by living abroad, working with foreign workers, and any other intensive, long-term contact with people from foreign cultures.

Learning a language can help with these, but it is not in itself enough to develop cultural intelligence on a large scale. Theoretical or practical training is also insufficient if it is not accompanied by a long-term period of experience.

In my more distant goal, I had the idea of designing and recommending training courses for multicultural companies, but based on the results of my research, I modified my idea, as simple training courses can only be a starting point to achieve the right goal. Based on the results, I believe that multicultural development programmes are needed, in which one of the first steps, most of all the first step, is to participate in training, followed by further multicultural experience opportunities such as secondments abroad, joint programmes with foreigners, training, and the organisation of projects. These long-term programmes are particularly useful and important for the development of future managers in companies.

After studying more than 30 models of cultural competence, Soon Ang et al. formulated in 2011 the distinction between cultural intelligence and intercultural competence and their relationship, in which intercultural competence is rather characterized as a personality trait, a behaviour and a worldview (ANG et al. 2015).

## 4. CONCLUSIONS AND PROPOSALS

Based on the results, the hypotheses that I set up at the beginning of my research were confirmed or rejected as follows (Table 8):

*Table 8: Acceptance/rejection of hypotheses*

HIPOTHESIS	ACCEPT
<b>H1</b> Intercultural experiences in one's life course contribute significantly to higher levels of cultural intelligence (CQ).	✓
<b>H2</b> People with higher cultural intelligence have a more positive perception of multicultural work environments.	✓ X
<b>H3</b> Intercultural competence elements have a positive impact on the level of cultural intelligence (CQ).	✓
<b>H4</b> Cultural intelligence (CQ) has a stronger influence on management competence (MC) than the sociodemographic characteristics of the leader (age, education, gender, whether the person is Hungarian or foreign) or the role (position) in the organisation.	✓

**H1** *Intercultural experiences in one's life course contribute significantly to higher levels of cultural intelligence (CQ).*

I used statistical methods to analyse the relationship between the mean of cultural intelligence and other variables, the results of which confirmed that the level of cultural intelligence is related to experience abroad and multicultural work experience. I confirmed a moderately strong positive correlation between multicultural experience and cultural intelligence, i.e., the most effective way to develop cultural intelligence is experience in a multicultural environment, but mostly in other cultures.

### **Suggestions for the practical use of research results:**

- As it is not only work-related multicultural experiences that are useful for individuals, but also individual ones, it is necessary to support the acquisition of multicultural experiences as early as possible, either through the school system or through family, personal programmes, and projects.
  - Participation in various exchanges, study trips and Erasmus+ projects in primary and secondary schools.



- In addition to the wide range of study and work placements abroad, which are also available to higher education, the implementation of joint classes, programmes and projects with the growing number of foreign scholarship holders studying in Hungarian institutions should be strengthened.
- For young people starting out in their careers, it is attractive to include a placement abroad in the first steps of their career path, giving them the experience, they need to develop their cultural intelligence early on in their working life.

***H2 People with higher cultural intelligence have a more positive perception of multicultural work environments.***

The hypothesis testing shows that people with more international experience - and thus higher CQs - have positive attitudes towards multicultural workplaces for two statements; they are less afraid of managers of other nationalities, and they believe in equal opportunities.

I found that openness to a multicultural work environment is higher among employees (managers) who have a higher level of cultural intelligence.

No significant relationship was found between the level of cultural intelligence and 3 statements (“The manager's nationality is not important. He/she needs to be sufficiently professional and interpersonally competent for his/her position.”, “It takes less effort for managers to become accepted if the manager and their subordinates are of the same nationality.”, “In multicultural workplace managers are more likely to judge their subordinates by their performance.”)

**Suggestions for the practical use of research results:**

The level of cultural intelligence affects performance in a multicultural environment, so measuring it and then continuously improving and maintaining it is important for any company to remain competitive.

I recommend that HR in their international recruitment practices should include cultural intelligence as one of the competencies to be measured and ensure its continuous development in the future.

***H3 Intercultural competence elements have a positive impact on the level of cultural intelligence (CQ).***

The link between intercultural competence elements and cultural intelligence and its dimensions has been clearly demonstrated. Each of the intercultural competence skills is significantly related to the value and dimensions of cultural intelligence.

Grouping the intercultural competence items, the results of the correlation study show that the uncertainty management factor (relational skills, tolerance of uncertainty, flexibility, sense of humour) is related to the motivational CQ and the acceptance factor (patience and respect, cultural empathy, strong sense of self) with the metacognitive CQ and the desire to know factor (language skills) with the cognitive CQ, but each factor has a significant positive relationship with each of the cultural intelligence dimensions.

Those who already have better intercultural competence skills can develop their level of cultural intelligence more quickly and excel.

### **Suggestions for the practical use of research results:**

When choosing the employee to be posted abroad, the intercultural competencies of the employee must be taken into account, as research shows that the success or failure of a posting abroad is strongly dependent on the quality of these competencies.

I recommend that the company assesses the candidate's intercultural competencies during the selection process and during the training before the assignment, so that it is clear before the assignment in which areas the candidate may have difficulties.

***H4*** *Cultural intelligence (CQ) has a stronger influence on management competence (MC) than the sociodemographic characteristics of the leader (age, education, gender, whether the person is Hungarian or foreign) or the role (position) in the organisation.*

All four dimensions of cultural intelligence are significantly related to elements of leadership competence, while this is not the case for sociodemographic characteristics. Only female leaders have significantly higher means for the management competence item of personality traits.

Since the research shows a strong significant relationship between cultural intelligence (CQ) and leadership competencies (MC), it is clear that leaders with higher CQ are more effective in their leadership roles.

If the professional and individual training and development of managers includes international experience, both competencies are strengthened in a complementary way.

### **Suggestions for the practical use of research results:**

Based on the results of the empirical research, I found that cognitive CQ strongly influences leadership skills, so it should be a major focus in leadership training (higher education), since the knowledge base is acquired at school, which reflects the importance of leadership training, especially multicultural leadership training, focusing on theoretical training.

It is strongly recommended that cultural intelligence should be taught and introduced as a separate subject in business studies in management training. Furthermore, for interested students, measuring cultural intelligence in the light of the results should be a means of improving areas of weakness. The same could be proposed for those working in multicultural environments, regardless of their position in the company hierarchy.

My aim is to make cultural intelligence as widely known as possible, so my plan is to create a publication that will exclusively include literature and research on cultural intelligence, which can be used by both academia and the corporate sector.

On the basis of the planned publication, I also plan to compile a CQ programme, which will include the assessment and long-term monitoring of employees' cultural intelligence, as well as its development, including various training courses, foreign assignments, joint workshops and projects with employees from different cultures.

## **5. NEW SCIENTIFIC RESULTS**

In this thesis I have analysed four areas along the lines of two databases. Based on their objectives, I have formulated hypotheses that, if proven or rejected, answer important professional questions.

I found that multicultural experience (living abroad and/or multicultural work experience) contributes significantly to the development of cultural intelligence, but that sociodemographic factors do not have an impact on the level of cultural intelligence.

I have shown that higher levels of cultural intelligence in employees make them more open to multicultural workplaces. When applying for a job, employees accept managers and colleagues of other nationalities and working in international teams and multicultural environments without ill-feeling.

I have found that the level of development of intercultural competence is closely related to the level of cultural intelligence attainable by the individual.

It was proven that among the factors examined (cultural intelligence, gender, origin, age, work experience, position and education), the level of cultural intelligence of managers is significantly related to managerial competencies to the greatest extent.

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