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ANALYSIS OF THE MOST COMMON HUMAN RESOURCE COMPETENCY MODELS THAT NEED TO BE UPDATED

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This may be one of the most challenging and unpredictable period in history due to the Russian – Ukrainian war, the pandemic, and upcoming changes at workplaces brought by Industry 4.0. The problems managers are facing today are immense, so a new set of competencies should be adapted. The research framework of this study is supported by the human capital theory. The six domains of an HR competence model that can be universally applied are found to include in this study (1) business (2) personal (3) HR tools, practices, and processes, (4) HR information system and analytics, (5) change, and (6) organisation and culture-related competencies after reviewing the previously developed HR competency models. Digital skills, HR analytics, HR relations, and entrepreneurship skills are advised to take into account when developing a local HR competency model as firms are restructuring to fit the current virtual and technologically oriented business environment.

Keywords: **human capital theory, industry 4.0, digital skills, HR analytics, entrepreneurship skills**

Az orosz-ukrán háború, a világjárvány és az Ipar 4.0 által a munkahelyeken bekövetkező változások miatt talán a mostani a történelem egyik legnehezebb és legkiszámíthatatlanabb időszaka. A menedzserek előtt álló, megoldandó napi problémák sok kihívással járnak, ezért új kompetenciákat kell alkalmazni. A tanulmány kutatási keretét az emberi tőke elmélete támasztja alá. A korábban kidolgozott HR-kompetenciamodellek áttekintése után egy általánosan alkalmazható HR-kompetenciamodell hat területét ismertetjük a tanulmányban, melyek a következők: (1) üzleti, (2) személyes, (3) HR-eszközök, gyakorlatok és folyamatok, (4) HR-információs rendszer és analitika, (5) változás, valamint (6) szervezettel és kultúrával kapcsolatos kompetenciák. A digitális készségeket, a HR-analitikát, a HR-kapcsolatokat és a vállalkozói készségeket tanácsos figyelembe venni a helyi HR-kompetenciamodell kidolgozásakor, mivel a cégek a jelenlegi virtuális és technológiaorientált üzleti környezethez igazodva átszerveződnek.

Kulcsszavak: **humántőke-elmélet, humánerőforrás-kompetenciamodell, Ipar 4.0, digitális készségek, HR elemzői és vállalkozói készségek**

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This may be one of the most challenging and unpredictable times for everyone in human history.

The war between Russia and Ukraine has been labelled as the largest war since World War II. Thousands of people have died in devastated cities, and millions of people have been displaced within Ukraine and neighbouring nations nowadays.

For the past two years, humanity has been fighting the COVID-19 pandemic, and the fight is still ongoing. Globally, more than 500 million people have been infected and more than 6 million died (WHO, 2022).The socio-economic conditions of many countries are deteriorating, and inflation is increasing in many countries all around the world.

The Fourth Industrial Revolution (IR 4.0), which includes terms like digitization, robots, machine learning, automation, and artificial intelligence (AI), is thought to be a game changer because AI is expected to outperform humans in cognitive skills like learning, analysing, communicating, and understanding humans. As a result, it is extremely difficult to predict how the job market will look like in 2050 or 2100 but acquiring certain technical and non-technical competencies at any level of employment, as well as preparing ourselves and our children for future challenges can be one way to contribute to a solution of this upcoming challenges we are going to face in the future.

Competencies are typically thought of as being what people need to have to perform their jobs and thrive in their careers. For HR managers, it is required to possess a set of competencies in a job they perform, which is the so-called HR competency model (HRC model). Most importantly, these previously created HRC models have not been assessed in unexpected and turbulent circumstances such as the COVID-19 pandemic or the current economic depression. It is definitely the time for HR experts to define new workplace standards for employee well-being, working style, performance, and communication methods, and to assist firms in making a smooth transition to technology-intensive business and the digital workplaces. Based on the research, it is reasonable to assume that previously validated HR competency models in various contexts are not fully applicable or supportive of HR professionals who are being challenged to solve the massive number of workplace-related problems, economic and IR 4.0 related challenges all over the world. Now is the time for each of us to reflect and consider what skills and abilities will help us move forward more easily and smoothly into a new era of human history.

Research objectives

To adapt to change and tackle uncertainties caused by IR 4.0, COVID -related issues and war, defining the most demanded KSAOs should not be overlooked today. Therefore, the researchers strive to contribute to the resolution of this problem by reviewing relevant literature on competence and HR competency model, collecting a group of the most important and fundamental HR competences from both previously constructed and more recent HRC models, and proposing certain numbers of HR skills related to digitization and automation at a workplace to assist readers in developing the most appropriate and locally adopted HRC model in the future.

Research questions

Based on the objectives and the literature, the following research questions are developed:

RQ1: What are the HRC domains that can be used to build a locally customized and locally adjusted competency model for HR professionals?

RQ2: What kind of key competencies do HR managers require when working in an IR 4.0 environment?

Statement of the problem and motivation

The HRC models developed and validated by Ulrich and his teams (HRCS from 1987 to 2016), Lawson (1990), Schoonover (1997) together with SHRM, CIPD (2015), AHRI (2014), Boyatzis (1982), Spencer & Spencer (1993), Lo, Macky & Pio (2015) have been accepted as practical and applicable, leading HR professionals to add value to organisations by performing their roles effectively and successfully. However, these HRC models have not been constructed and tested at this dramatic time in human history like today. Therefore, it can be our responsibility as researchers to contribute to and facilitate the development of a locally adjusted HRC model by reviewing and summarizing the globally accepted and commonly used competency domains of HR professionals and revealing the generally demanded skills for HR professionals in the context of IR 4.0, which is regarded as the future of manufacturing.

Significance of the study

HR managers play a critical role in establishing and implementing organisational business strategy only if they are well-equipped and considered as strategic partners (Lawler & Mohrman, 2003). Workforce mobility (Papp, 2008) and part-time employment opportunities (Papp, 2012) can be expanded if HR professionals' competencies are strengthened.

Hiring an employee for an HR position, designing a competency-based training programme to train, evaluate, promote and compensate HR professionals are all examples of how a well-developed competency model in human resource systems can be used. Our desired objective with this study is to provide a roadmap to developing a competency model for HR managers in any country and any industry.

Theoretical background

Human Capital Theory

Human capital theory (HCT) has become a significant theoretical framework for understanding a country's or community's profound socioeconomic changes and planning how to drive wealth growth. HCT is defined as the sum of all investments made in humans to improve their ability to produce other things effectively. The main outcome of investing in people is change (Nafukho, Hairston & Brooks, 2004).

As indicated in Table 1, the researchers analysed the literature on the concept of HCT and highlighted the key outcomes of the theory at three different levels.

In HCT, education is classified as an individual, organisational as well as economic good as shown in Table 1. Education investment, according to the theory, yields both personal and economic returns. Individuals with advanced human capital are rewarded financially, and, as a result, firms and economies benefit from it. According to Black & Lynch (1996), a 10% increase in average education results in an 8.5% increase in manufacturing productivity and a 12.7% increase in non-manufacturing produc-

tivity. Like any other assets, human capital should be used effectively (Schultz, 1961). Therefore, building a local HR competency model or updating previously validated models for HR professionals is critical to boost the productivity of HR managers as well as organisations by making the best of the skills and resources of human resource professionals especially at this time of human history when the COVID pandemic is forcing all types of workplaces to make a quick transition from traditional workplaces to virtual work environments such as home office.

Competence

According to the Webster dictionary, the term of competence occurred for the very first time in 1596 (Makulova et al., 2015). The originality of the term competence was first used in an article written by White (1959) who attempted to conceptualize an idea of the competence for performance motivation. Competence is still one of the most complex and widespread terms used in the human resource and organisational management (Audrey, 1989). There is not a universal and commonly agreed definition

Table 1

The proposed outcomes of HCT on the concept of return on education

Authors	Level		
	Individual	*Organisational*	*National*
Denison (1962)			Economic growth
Bloch & Smith (1977)	Higher earnings	Higher productivity	Increased employment
Marginson (1989, 1993)	Improved productivity & higher salary		
Becker (1993)	Increased productivity	Increased productivity	Encouraging international growth & development
Kroch & Sjolbom (1994)	Possibility of increased earnings		
Rephann (2002)	Increased employment opportunities		
Nafukho, Hairston & Brooks (2004)	Improved performance	Improved productivity and profitability	The benefit to society
Fleischhauer (2007)		Increased productivity	
Tan (2014)	Increased abilities, skills, adaptability, & mobility		Reduced unemployment
Gillies (2017)	Improved productivity & higher salary		Boosting economic growth

Source: authors' own compilation (2022)

Table 2

The proposed definitions of competence by different authors

Author	The proposed definition of a competency
Lundberg (1972)	Competence is made up of a person's behavioral insights, understanding, and abilities.
Hayes (1979)	Knowledge, motivation, social characteristics, roles or skills of an individual in accordance with a manager's requirements from a company.
Boyatzis (1982)	The individual capacity that includes the individual's behaviour with desired parameters of an organisation, makes a person be hired.
Woodruffe (1991)	A mixture of personal competence(PC) and personal excellence(PE) at work. PC is related to the dimensions of one's artificial behaviour to demonstrate. PE is more associated with the competences of the person in their own field.
Dubois (1993)	Employees' capacity to carry out tasks in a manner that satisfies job criteria while avoiding interruption from organisational internal and external environments.
Spencer & Spencer (1993, p. 9)	Competences are an underlying characteristic of an individual that is causally related to criterion referenced effective and/or superior performance in a job or situation.
Ulrich et al. (1995)	An individual's demonstrated knowledge, skills and abilities.
Swanson, Holton & Holton (2001)	The displayed behaviours in someone's specialized area, which are related to the consistently demonstrated actions of a person and affect their executions.
Becker et al. (2001)	Individual's knowledge, skills, abilities and other characteristics that have an influence on their job performance.
UNID (2002)	Knowledge, skills, and specifications that can make an individual function better, not considering their specialized proficiency in that allocated job.
The ARZESH competency model (Maaleki, 2018)	A set of knowledge, abilities, skills, experience and behaviours that generate the effective performance of a person's activities. It should be measurable and acquirable.

Source: authors' own editing (2019)

of managerial competence among scholars in HRM so it may be worth reviewing and synthesizing the literature on managerial competence and analysing changes and evolvements over the past decades (Table 2).

Based on the definitions of competency management from 1970 to 2010, this term can be defined as a collection of an individual's knowledge, skills, abilities, personal attitudes, or behaviours as well as experience which are measurable and attainable through training, and have an impact on a person's effectiveness, individual success, job performance. It is evident that defining competence and creating an acceptable competence framework for certain professions remain difficult tasks, but it is a very useful term for bridging the gap between education and job requirements (Boon & van der Klink, 2002).

HR competency

Professional competency can be explained as practical as well as theoretical readiness of any profession for professional activities (Makulova et al., 2015). To achieve high performance outcomes, a position relating to HR activities at an organisation requires individuals to have certain academic preparation, KSAOs, as well as practical experience (Cohen, 2015). Individuals who have acquired the necessary HRM competencies can succeed and perform effectively.

Human resource competency model

A model of competence is defined as a group of necessary competences gathered from the observation data between the superior and satisfactory performers (Draganidis & Mentzas, 2006). The history of the HRC models began with the research carried out by Patricia McLagen in the 1980s, identifying the most essential competencies for HR professional who are in charge of HR training and development, but this model was applied to all professionals of Human Resource Development (HRD) later on (McLagen, 1989). After their attempts, various HRC models have been formed by different researchers as well as associations in many countries such as the USA, Australia, and the UK. Most of the very familiar HR models are summarized in Table 3.

A summary of Table 3 demonstrates that the Human Resource Competency Study (HRCS) model, which is a longitudinal study, was carried out in seven rounds (from 1988 to 2016) and is considered to be the world's largest as well as the most comprehensive HRC model (Cohen, 2015). Since 1987 the major shift has been observed in HRCS model dividing from three categories of HRC in 1987 to nine HRC domains in 2016. Therefore, it can be anticipated that the competences required of HR managers today will continue to evolve in the future as a result of global economic, environmental, and technological changes. Indeed, change is essential to growth, after all.

A review of Table 3 shows that the majority of HRC models are not only relevant to all levels of HR professionals, from entry to executive, but they are also not tailored or designed to be applied to a specific business industry. As a result, it is reasonable to assume that the goal of the majority of HRC model studies was to identify the most important general and universal competences for HR practitioners that are applicable to all business industries.

Lastly**,** based on the summary of the literature reviewed by the researchers on the topic of HRC models in Table 3, six HR competency domains (*'business competency', 'personal competency', 'HR tools, practices, and process related competency', 'HR information system and analytics related competency', 'change competency', and 'organisation and culture related competency*) were drawn and suggested as the foundation of the basic elements of a competency model for HR managers in the future. Most importantly, "these six global HR professional competencies are capable of providing order, structure, and integration for almost all other HR competency models from various regions" (Ulrich et al., 2015, p. 60).

On top of that, each HR competency domain (construct) is created and made up of several characteristics and skills. In more detail, (1) 'knowing the business', 'having business-driven acumen', 'having commercial awareness', 'being future-oriented, and 'having financial perspective and 'being a strategic positioner' can be used as the measurement indicators (items) of a business-related competency when developing and validating a local HR competency model since these sub-competencies forms this competency domain. (2) The measuring indicators for personal competency include 'being an ethical and credible activist', 'being a critical thinker, courageous and service oriented', 'understanding and caring for others, 'being service oriented, and 'providing counsel and coaching'. (3) As for HR tools, practices and process-related competency domain, 'being an HR expertise and human capital curator', 'being an analytical designer and interpreter', 'being a compliance, resource, and talent planning manager, 'being a training and talent development manager', 'being a performance and reward manager', 'being an employee engagement and relations manager', 'being a workforce designer and solution-driven manager', and 'having good knowledge about employee rights and labor law' can be the measurement items for this competency domain. (4) A competency domain related to HR information systems and HR analytics may be measured using the following criteria: 'being a technology and media integrator', 'having good communication skills', 'providing good service delivery', 'having a data-driven mindset', 'supporting decisions with analytics', 'providing consulting', and 'having research and discovery mindset'. (5) The following criteria could be used to assess a change-related competency domain in a model: 'being a change leader and influencer', 'being collaborative and resolver of issues', 'having execution excellence', 'having good understanding of knowledge and networking management', 'leveraging ideas to move faster', 'being business psychologists' and 'teaching people to take action'. (6), lastly, 'having the ability to navigate paradoxes', 'having global and cultural effectiveness', 'being a good organisation designer and development manager', and 'having good knowledge of restructuring organisations,' can be used to measure the competency domain named organisation and culture re-

lated competency. It might be important to note again that each suggested item for each of the HR competency domains listed above was created and derived from the analysis and synthesis of the previously examined and frequently applied HR competency models in Table 3.

Challenges of Industry 4.0 with regard to competencies and HR competency models

The challenges posed by the damaging conflict between Russia and Ukraine, the COVID epidemic, and digital and telecommunication transformation at the workplaces brought on by IR 4.0 have had a huge impact on our lives. COVID-19 changed the way we all do business in a variety of ways, and IR 4.0 requires businesses to adopt more

remarkable digitized industrial processes to maintain their competitive advantages in the market. Employees are being challenged to upskill in order to collaborate with smart machines as IT-driven changes in business manufacturing systems (Lasi et al., 2014) are broadening its framework from the manufacturing process to Agriculture 4.0.

After reviewing 1008 research articles through the Web of Science database using a keyword on industry 4.0, Shet & Pereira (2021) found 14 managerial competencies for IR 4.0 (*agility, business acumen, disruptive leadership, problem solving & decision, connected technology architecture, project leadership, digital intelligence & modelling, design thinking, collaborative mindset, research orientation, data analytics, robotic process automation,*

Table 3

Integration of HRC models and studies into six HR domains

HR association/ Authors (year)	Business	Personal	HR Tools, Practices and Processes	HR Information System and Analytics	Change	Organisation and Culture
HRCS: Round 7: 1987 – 2016 (Ulrich et al., 2015)	− Strategic positioner	− Credible activist	− Human capital curator − Total Reward steward − Analytics designer and interpreter − Compliance manager	− Technology and media integrator	− Culture and Change champion	− Paradox Navigator
SHRM:2014 (Vu, 2017; Ulrich et al., 2015)	− Business acumen	− Ethical practice − Leadership and navigation	− HR expertise	− Communication − Critical evaluation	− Relationship management − Consultation	− Global and cultural effectiveness
CIPD (2015)			− Resourcing and talent planning − Learning and talent development − Performance and rewards − Employee engagement − Employee relations	− Service delivery	− Information	− Organisation design − Organisation development
AHRI (2014)	− Business driven − Strategic architect − Future oriented	− Ethical and credible activist − Critical thinker − Courageous − Understand and care	− Workforce designer − Expert practitioner − Solutions driven		− Change leader − Influencer − Collaborative − Resolver of issues	− Organisational capability − Culture leader
AMEDIRH: 2015 (Vu, 2017; Ulrich et al., 2015)		− Self-awareness − Synthesis − Formulation − Coaching			− Collaboration − Knowledge management	− Innovative culture
Boston Consulting Group:2011 (Strack et al., 2011)	− HR Business partner		− Managing talent − Improving leadership − Recruiting − HR processes			− Restructuring organisation
(Antoine, 2015)		− Credibility with Line leaders − Providing counsel	− Offering solutions		− Change agent − Managing influence	
Schuler & Jackson (2001)	− Business competency	− Leadership and managerial competencies	− Professional and technical competencies		− Change and knowledge management	
Westerdahl (2015)	− Building business acumen		− Making right HR technology choices	− Having data driven mindset	− leveraging ideas to move faster	
Ridge & Sewitch (2015)	− Know the business	− Become trusted advisor		− Support decisions with analytics	− Be business psychologists − Teach people to take action	

Source: authors' own editing (2019)

sustainability), which are projected to lead managers to certain positive outcomes such as productivity, competitiveness, self-efficiency and customer satisfaction. Also, 12 main components of IR 4.0 (*machine learning, horizontal & vertical integration, additive manufacturing, simulation, big data, industrial internet of things, cyber security, autonomous robots, artificial intelligence, augmented reality, cloud computing and agile workforce*) have been collected during their research project. Those smart technologies mentioned in the above context are expected to bring many exciting changes and challenges to our everyday lives (Samans, 2019) in the near future.

Most importantly, the results of the review of previously developed HRC models in Table 3 as well as the main finding of the review article by Shet & Pereira (2021) are consistent with recent studies on the topic of competency and HRC model. For instance, problem solving as one of managerial competencies was discovered to be strong linear correlation with emotional intelligence by Sándor (2014). Moreover, HR expertise, change management, and business acumen were reported to be the most frequently used HR competencies by Beatty (2019), which were discovered to be one of the HR competency domains proposed by this study to be included in a locally developing model for future research.

Also, HR analytics (Talerico, 2021), as well as technical knowledge, data analysis and business acumen (McCartney et al., 2021) were identified as the most essential managerial competencies nowadays.

Bencsik (2021) called attention to the changes required by IR 4.0 and Pató et al. (2021) concluded that competencies will be swapped as a result of IR 4.0. Digital competences like openness to change, willingness to learn, problem-solving, resourcefulness, flexibility, and teamwork are coming to the foreground while others, namely, the representation of one's own point of view, ability to express opinions, assertiveness, use of work tools, knowledge of technical terms, information gathering, interpersonal skills, ability to deal with conflict and helpfulness are losing much of their importance.

HR effectiveness and its relationship with HR competence

Since the 1960s, researchers have been studying the effectiveness of managers (Morse & Wagner, 1978), and is defined by Han et al. (2006, p. 393) as 'how HR professionals perform as internal service providers to employees as well as line managers within a business'. The term HRM effectiveness is reported to be an indication of the effectiveness of HR activities such as recruitment, training and development, and retention (Guest & Peccei, 1994). Being an effective HR manager can have a positive influence on the increase in organisational outcomes as 8.4 percent of business performance is found to be predicted by HRCS 2012 model (Ulrich et al., 2011).

Services, roles and contributions of HR managers are three dimensions of HR effectiveness (Han et al., 2006). Literature also reveals that HRM's contribution is referred to as HRM effectiveness that contributes to organisational

performance (Ruel et al., 2007). Most importantly, a lack of necessary and appropriate HR competency causes HR professionals to underperform, which is a major concern for executives because HR professionals' KSAOs enable them to provide input on organisational outcomes through HR practices (Han et al., 2006). Many studies have shown that previously validated HR competency models are practical and efficient. For example, six basic HR competencies from the HRCS model 2012 can predict 42.5 percent of HR effectiveness (Ulrich et al., 2011). Similar research was carried out in Mongolia by Enkhjav (2018) and Enkhjav et al. (2020) using the HRCS 2012 model. The authors discovered that the sub-dimensions of HR effectiveness had a weak positive correlation with the sub-dimensions of HR competencies (r=0.239, p≤0.05 for capability builder and r=0.247, p≤0.05 for technology proponent).

Research methodology

This is a descriptive study based on a review of previously existing literature on HRC models constructed and popularized by adopting to many countries in a variety of businesses and industries all around the world. More specifically, in order to address Research Question One, not only the qualitative approach was employed to collect and generate a list of the HRC domains that can be used to build a locally customized competency model for HR professionals in any industry in the future, but also the quantitative research approach to demonstrate that these previously validated and widely implemented models can be groundwork of the further localized and updated models in HR since these models are reported to be positively and significantly related to HR effectiveness (Ulrich et al., 2011). More specifically, the result of correlation analysis of the researcher' previous study (Enkhjav, 2018) on six HRC domains of HRCS model 2012 as well as on three individual effectiveness of HR managers (HR role, HR service and HR effectiveness) in Mongolia is used to emphasize that the globally accepted HR competency models can function its role to help HR managers do their job effectively in the certain level, but these models have not been evaluated or updated for complex and chaotic situations like the COVID-19 outbreak, the war in Europe, or the highly digitalized automotive and smart systems in the IR 4.0 working environment.

As for Research Question Two, the qualitative approach was used to review the literature in order to reveal the generally demanded skills for HR professionals in the context of IR 4.0.

Sample and sampling method for a quantitative analysis of the study

A pair study design with multiple sampling populations was applied to compel data from multiple respondents (Gerhart et al., 2000) to avoid single-response bias and ensure more reliable measurements by collecting data from an HR manager and three employees from the same organisation in the private sector in Mongolia by using two separate survey questionnaires (HR and employees survey) with snowball

and convenience data sampling approach from August 2017 to April 2018. The majority of the previously available studies collected data only from HR professionals (Khatri & Budhwar, 2002) to examine HR competencies, which can be biased and insufficient. Therefore, data from a total of 270 employees as well as 90 HR managers from 90 organisations was gathered and uploaded to SPSS 20 software for the further analyses. More specifically, HR managers were asked to access their HR competencies by answering a total of 75 questions for the measurement items of HRCS 2012 model developed by the RBL group (2012) with a HR questionnaire in the application of 5-point Likert scale anchored by (1) very poorly and (5) very well. At the same time, three employees from the same organisation were requested to evaluate the effectiveness of their HR manager using the employees' questionnaire by answering a total of 30 questions developed by Wright et al. (2001) for HR service (15 items) and HR contribution (10) and McMahan et al. (1996) for HR role (5) together with the application of 7 and 10 Likert scales.

Six crucial element of HRCS 2021 model, namely, strategic positioner (1), credible activist (2), capability builder (3), change champion (4), HR innovator (5), and technology proponent (6) were applied and examined whether they are statistically and positively related with three sub-dimensions of HR effectiveness (HR role, HR service, and HR contribution) in the study that has been conducted by Enkhjav (2018) in Mongolia.

Results of the quantitative analysis of the study

Demographics for HR managers
The HR questionnaire of this study included 69 females (76.7%) of the 90 HR participants. In total, 36 participants (40%) have 3-5 years of career seniority in an HR-related position at their current companies. 44.4% were hired as HR staff; 38.9% (35) do not have any degree or vocational training in HR, but 26 participants have a bachelor's degree (28.9%), and 12 have a master's degree (13.3%) in HR.

Demographics for employees
166 (64.5%) of the 270 employees who took part in this study were female. 186 (68.9%) participants held a staff position. There were 127 participants with 1-2 years of service at their current organisations (47%), and 191 have a bachelor's degree (70.7%).

Results of the reliability analysis
The Cronbach alpha's values of six dimensions of HR competencies (overall HR competencies (.97), strategic positioner (.87), credible activist (.84), capability builder (.90), change champion (.89), innovator and integrator (.95), technology proponent (.89) as well as three sub-dimensions of HR effectiveness (overall HR effectiveness (.96), HR service (.93), HR role (.92) and HR contribution (.90) were examined and met the satisfactory level which is higher 0.6-0.7 (George & Mallery, 2003).

Results of the Pearson correlation analysis
The result of the correlation analysis in Table 4 shows that overall employees' perceived HR Effectiveness has a positive and significant relationship with all sub-dimensions of self-evaluated HR Competencies such as strategic positioner (r= .293, p<.01), credible activist (r= .220, p<.05), capability builder (r= .286, p<.01), change champion (r= .274, p<.01), HR Innovator (r= .233, p<.05), and technology proponent (r= .222, p<.05). Second, all six competencies of HRCS 2012 model have a stronger positive and significant relationship with HR contribution, in particular, strategic positioner (r= .329, p<.01), credible activist (r= .225, p<.05), capability builder (r= .312, p<.01), change champion (r= .280, p<.01), HR Innovator (r= .275, p<.01), and technology proponent (r= .304, p<.01). Third, both HR service and HR Role have a positive and significant relationship with three sub-HR competencies: strategic positioner (with HR service (r= .243, p<.05)) and with HR role (r= .257, p<.05)), capability builder (with HR service (r= .250, p<.05)) and with HR role (r= .250, p<.05)), and change champion (with HR service (r= .245, p<.05)) and with HR role (r= .245, p<.05)).

Most importantly, overall HR effectiveness was found to be statistically and positively related with overall HR competencies (r= .302, p<.01). This result shows that the strength of the correlation between HR competencies and HR effectiveness is positive but not desirably high (0.302) enough to be closer to +1.

Results of the linear regression analysis
From a simple linear regression analysis, Table 5 shows a significant and positive regression equation with an R2 of .091 (F(1, 88) = 8.809, p<.01). For each unit of overall HR competencies, employees' perceived HR Effectiveness can be increased by .660 unit. The variable overall HR Competencies (β=.302, p<.01) was found to be a statistically significant predictor of HR effectiveness. As results of the correlation and linear regression analyses, it is possible to conclude that previously validated HR competency models, such as HRCS 2012, were effectively assisting HR managers to perform their tasks because overall HR Competencies was found to predict approximately 9 percent of the variance in overall HR Effectiveness (Enkhjav, 2018) in Mongolia. However, the result of the Pearson correlation analysis as well as the linear regression analysis indicated that the tested correlation between variables is agreeable but weaker. In contrast, in 2011, approximately 42% of HR effectiveness was explained by HRCS2012 (Ulrich et al., 2011).

Therefore, (1) the findings of this quantitative study; (2) the shift patterns observed in the development of HR competency models from 1987 to 2015 in Table 3 and (3) the economic situation around the world lead us to the point that those previously validated HR competency models may need to be retested and updated by examining each competency domain of models before implementing into practice since the models have not been tested and developed in the economically critical period like we are experiencing right now.

Pearson Correlation Analysis

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
Strategic Positioner	3.58	0.54										
Credible Activist	3.91	0.42	.599**									
Capability Builder	3.71	0.56	.729**	.745**								
Change Champion	3.71	0.52	.413**	.621**	.691**							
HR Innovator	3.6	0.62	.632**	.689**	.757**	.673**						
Technology Proponent	3.56	0.64	.678**	.603**	.690**	.483**	.737**					
HR Competencies	3.68	0.46	.805**	.825**	.912**	.760**	.896**	.846**				
Service	4.6	0.89	*.243**	.147	*.250**	*.245**	.203	.149	*.245**			
Role	6.25	1.53	*.257**	*.209**	*.250**	*.245**	.193	.186	*.263**	. 782**		
Contribution	4.52	0.86	*.329***	*.255**	*.312***	*.280***	*.275***	*.304***	*.349***	.786**	.801**	
HR Effectiveness	5.13	1.02	.293**	.220*	.286**	.274**	.233*	.222*	*.302***	.905**	.955**	.913**

Note: **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Source: Enkhjav (2018, p. 61)

Table 5

The linear regression result between HR competencies and HR effectiveness

		Unstandardized Coefficients		Standard-ized Coeffi-cients	Sig.	F	Sig.	R2
Model		B	Std. Error	Beta				
(Constant)		2.698	.826		.002			
Overall HR Competencies		.660	.223	.302**	.004	.809	.004	.091

Note. Dependent variable: HR Effectiveness **p<.01

Source: Enkhjav (2018, p. 62)

Discussion on the skills and abilities required for managers as well as HR professionals in the context of the IR 4.0

One of the objectives of this study was to find the most common set of globally applied HRC domains which can be used as a framework of future researchers and leaders to construct a local HRC model in any industry in the future to help HR professionals overcome changes and challenges in the workplaces. After reviewing literature on the topic of competence and HRC model, the following six category of HRC domains named (1) business competency, (2) personal competency, (3) HR tool, practices, and processes related competency, (4) HR information system and analytics related competency, (5) change related competency, and (6) organisation and culture related competency, have been generated and found as a partial result of this study. Most importantly, based on these globally accepted six sub-domains of the HR competency models, a locally adapted and newly updated competency model of HR professionals can be constructed and tested in any region or in any industry.

As far as the second objective is concerned, let us analyse Industry 4.0 and summarize how it has changed the set of necessary competencies.

This study also emphasized managerial as well as specific HR skills that HR managers should acquire in order to deal with the transition from traditional workplaces to virtual and digitalized working environments induced by IR 4.0 and the COVID pandemic. Digital competency (e-skill), HR analytics, human relation skills, and entrepreneurship skills have been discussed and recommended for those aiming to develop a competency model for HR managers in the future because we must consider both the positive and negative aspects of the ongoing technological revolution and prepare ourselves for future challenges.

Since the term IR 4.0 has become widely known around the world, many researchers have attempted to understand what set of abilities are expected of HR professionals in this digitized period of the next industrial revolution. Some technical and non-technical competencies have been identified for managers of the future workplace in order to accomplish their tasks effectively. With the exception of the six universal core HR competency categories stated in Table 3 as a partial result of this study, the following skills may need to be concerned when a HR competency model is being designed or tested in the future. Most importantly, HR managers should be equipped with the necessary skill set to lead and prepare their workforce for future massive changes in the workplaces of many different industries because the concept of IR 4.0 is spreading not only through various sectors such as Construction 4.0, Agriculture 4.0, and Service 4.0, but is also being implemented in both developed and developing countries all over the world such as Germany, the United Kingdom, France, Sweden, Japan, Hungary, Indonesia, China and India.

Managers will need to be up-to-date on new technologies, work techniques, and other aspects of the smart tech-

nologies offered by IR 4.0 in order to implement this new trend within their organisations, as the pace of this technical change is accelerating (Shet & Pereira, 2021). The following HR skills related to IR 4.0 must be considered when updating and developing a competency model for HR professionals.

Digital competency (e-skill)

In the future, automation and machine learning may affect every line of work (Harari, 2018). To respond to the IR 4.0 technological revolution, the concept of HRM has gradually evolved into digital HR (Bondarouk, Ruel & Parr, 2017). This technological revolution will continue because people today are more encouraged to work and live online. In today's workplace, advanced technical and soft skills are valued, and a combination of these skills is known as e-skills (Andersson et al., 2016). According to Briggs & Makice (2012), digital competency enables managers to work in a digital environment by converting massive amounts of data into information and acting intellectually with evidence-based knowledge. Furthermore, those e-skills can assist HR managers in successfully transitioning from an in-person to a remote working environment.

HR analytics

HR analytics, whether as a process or as a practice, can be viewed as a more technical, analytical, and data-centric role that necessitates a specific set of KSAOs as well as a variety of analytical and technical competencies (Minbaeva, 2018). HR analytics is also defined as 'an HR practice enabled by information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, organisational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making' (Marler, & Boudreau, 2017, p. 13).

HR professionals' analytical skills can bring many benefits to employers. HR Analysts use a variety of technologies to collect and transform data into valuable workforce insights that drive strategic decision-making (Minaeva, 2018) and it offers value to the HR function by leveraging their specialized KSAOs to make strategic workforce decisions leading to higher performance (McCartney, Murphy, & McCarthy, 2021). According to a Deloitte study (2014), increasing investments in HR assessment and analytics can double recruiting improvements, triple leadership development capabilities, and result in 30 percent higher stock prices in the market (Pease, 2015).

Human relations skills

People in quarantine have been shown to experience high levels of worry, tension, and despair (Holmes et al., 2020). Another study found that roughly 35% of over 50,000 participants are experiencing psychological discomfort as a result of the pandemic (Qiu et al., 2020). Human relations is the essential instrument for managers to establish an efficient relationship across many changing environments to provide a safe and stress-free work environment (Bukhari & Afzal, 2017). Effective communication like a high-level softer skill, has already been identified as a required skill for managers to boost performance (Bennett, 2009).

Entrepreneurship as a competency of HR professionals

Entrepreneurship is asserted to be a key driver of economic development referring to the creation of new businesses regarding innovation and novelty (Meyer & Jongh, 2018). According to Van Stel et al., (2005), entrepreneurial activity by entrepreneurs and owner/managers of young businesses has an impact on economic growth, but they also found that it can vary among countries due to the different stages of economic development. From the Human Resource management perspective, HR managers are encouraged to be entrepreneurs in the future (Boselie & Paauwe, 2005) and authors also explain that if HR managers become entrepreneurs, they can be risk-takers (courageous), customer-oriented (service-oriented), and business drivers (business-driven acumen), which may be one of the most vital HR competencies to help businesses rebuild and restructure their business activities.

Implications

The significance of conducting research on competence and HRC models cannot be overstated because organisations can use a competence model for a variety of purposes such as identifying job expectations, recruiting the best candidates, increasing productivity, making changes, and adjusting employees to the organisational culture, strategies, and values. More specifically, the researchers believe that the six HR competency domains identified as the primary outcome of this study can be easily applied to the development of a local HRC model for academics, researchers, and HR practitioners in any industry. Another significant finding of this study was the emphasis on digital skills, HR analytics, HR relations, and entrepreneurship skills, all of which can be used to update or establish HR models in virtual workplaces in any country, as the term 'home office or virtual workplace' is no longer new to us.

Conclusions

First, the researchers wanted to restate that revealing the local competences of HR professionals results in the personal development of these individuals as well as the growth of the organisations they work for. According to HCT, investing in education leads to increased profit, faster economic growth and quality performance. Second, fully equipped with the right set of KSAOs, HR professionals are able to help firms resolve the economic, environmental and other problems created by unpredictable situations like COVID or war in Europe by being a competent manager and a reliable partner to the top management team. Third, the key reason that scholars and researchers construct an HR competency model is to improve the quality of HR activities and services provided by an HR professional in an organisation. The advantages of establishing an HRC model is enormous, but it is worth restating;

(1) we should close the current skills gap on HR managers and future HR students by identifying the most essential competencies for an HR professionals for all levels, and (2); we should focus on bringing the personal development of HR managers as well as the growth of the organisations.

Overall, the researchers came to the following conclusions. First, the research objectives of this study were met, and the research questions were addressed by providing the six globally applicable HR competency domains to build a local HR competency model for anyone, as well as by listing a specific number of HR skills related to IR 4.0. Second, this study attempted to fill a research gap by reviewing and discussing the previously validated and widely used HR models which need to be reconsidered by re-examining and updating each component of the models. Third, both quantitative and qualitative research methodologies were used to achieve the research goals, together with statistical analysis and a thorough intensive examination of the existing literature. However, the primary data should be used for future studies. Fourth, the researchers strongly advise performing both quantitative and qualitative research on the kinds of core competences needed by HR professionals in the age of data-driven and smart technology-based business environments. Testing the correlation between job success and each element of a locally developed HR competency model is strongly encouraged after developing a general framework of key HR competencies in any industry or nation in the future.

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