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CONTENTS

MÁTÉ REPISKY

A CATEGORIZATION OF THE CONSEQUENCES OF ENTREPRENEURIAL FAILURE
– VALIDATED IN HUNGARY 2.

XUEYAN LI – HENRIETT PRIMECZ – ANNA LAURA PAGET

UNDERSTANDING THE EARLY CAREER SELF-INITIATED EXPATRIATION
– A REVIEW AND DIRECTIONS FOR FUTURE RESEARCH 18.

CSERNE PANKA PÓTA – PATRÍCIA BECSKY-NAGY

DISRUPTIVE SOLUTIONS FOR FINTECHS AND THEIR RISKS
– HUNGARIAN CASE STUDIES 31.

GAVKHAR TURAEVA

THE VALUE OF LEADERSHIP IN SMALL ENTERPRISES
FROM THEIR EMPLOYEES' PERSPECTIVE 41.

BALÁZS HERCZEG – ÉVA PINTÉR – PÉTER BAGÓ

HOW GREEN AND DIGITAL TRANSFORMATION SHAPES
INDUSTRIES – TWIN TRANSITION TO A GREEN AND DIGITAL FUTURE 51.

TUMENTSETSEG ENKHJAV – ERIKA VARGA

ANALYSIS OF THE MOST COMMON HUMAN RESOURCE COMPETENCY
MODELS THAT NEED TO BE UPDATED 64.



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A CATEGORIZATION OF THE CONSEQUENCES OF ENTREPRENEURIAL FAILURE – VALIDATED IN HUNGARY

VÁLLALKOZÓI KUDARC KÖVETKEZMÉNYEINEK RENDSZEREZÉSE – MAGYARORSZÁGON VALIDÁLVA

Uncertainty and risk are basic elements of entrepreneurial life, and consequently, most entrepreneurs will experience failure, which can impact their lives in various ways. Although several previous studies have tried to categorize the consequences of failure, none could cover their full range. Therefore, the main objective of this qualitative, narrative research was to build a useable categorization system for the consequences of entrepreneurial failure. As a result of this theoretical- and sixteen-interview-based research, the consequences of entrepreneurial failure can be categorized into six groups (and twenty-four sub-groups): financial, psychological, social, professional, legal and physiological consequences. Based on the results, failure is not a negative experience for all entrepreneurs; in fact, for many, negative and positive consequences balanced each other out, or they were not impacted by the failure. During the analysis, potential connections between categories of consequences and the identification of root consequences are also presented.

Keywords: entrepreneurial failure; consequence; cost of failure

A bizonytalanság és kockázat a vállalkozói lét alapelemei, így a legtöbb vállalkozó megtapasztalja a kudarcot is, ami számos módon hathat a vállalkozó életére. Annak ellenére, hogy több, korábbi kutatás kísérletet tett ezek rendszerezésére, egyik se tudta maradéktalanul lefedni a következmények teljes skáláját. Jelen kvalitatív, narratív interjúkutatás fő célja az volt, hogy egy használható kudarc következmény rendszerezést alkosson. A szakirodalmi és 16 vállalkozóval készült kutatás alapján a kudarc következményei 6 nagy kategóriába (és 24 alkategóriába) rendszerezhetők: pénzügyi, pszichológiai, társas, szakmai, jogi és fiziológiai következmények. Az eredmények alapján kijelenthető, hogy nem minden vállalkozó számára negatív élmény a kudarc, sőt sokuk számára a negatív és pozitív következmények kiegyenlítik egymást, vagy nem igazán hat rájuk a kudarc. A szerző az elemzés során bemutatja az egyes következménykategóriák közötti lehetséges kölcsönhatásokat és az azonosított magkövetkezményeket is.

Kulcsszavak: vállalkozói kudarc, következmény, kudarc költsége

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Uncertainty and risk are basic elements of the entrepreneurial life (Fang He & Krähenmann, 2021; Jenkins et al., 2014; McGrath, 1999; Shepherd & Patzelt, 2017; Williamson et al., 2022); consequently, experiencing failure is one of the fundamental characteristics of being an entrepreneur (Fang He & Krähenmann, 2021; Klimas et al., 2021; McGrath, 1999; Yamakawa et al., 2015). All over the world, both historical and recent data show that half of all enterprises fail wit-

hin three to five years (Artinger & Powell, 2016; Atsan, 2016; Corner et al., 2017; Fang He & Krähenmann, 2021; Silver, 2015), which finding is consistent with data from the Hungarian Central Statistical Office (2022). Moreover, the recent COVID-19 pandemic and the following economic recession have probably only worsened the situation (Hwang & Choi, 2021). The researcher consensus is that failure is a painful and traumatic experience for most entrepreneurs (Cope, 2011;

Shepherd, 2003; Singh et al., 2015; Ucbasaran et al., 2013) and affects their lives negatively, not only psychologically but in several other ways (Cope, 2011; Fang He & Krähenmann, 2021; Singh et al., 2007; Ucbasaran et al., 2013). Most prior studies have focused on negative consequences; however, failure can have positive impacts, too (Jenkins et al., 2014; Klimas et al., 2021). Moreover, if we extend the time interval, we can observe how failure can lead entrepreneurs to obtain unique information and experiences, and even recovery from failure can be considered a learning process (Cope, 2011; Cotterill, 2012; Fang He & Krähenmann, 2021; Jenkins et al., 2014; McGrath, 1999; Riar et al., 2021; Shepherd & Patzelt, 2017; Ucbasaran et al., 2013).

The main objective of this study was to build a useable categorization system for the consequences of entrepreneurial failure. This was supported by four subgoals:

1. creation of a categorization based on theoretical research,
2. validation of this categorization on theoretical and primary data,
3. systematic and detailed presentation of explored consequences,
4. test of usability of the categorization.

The source of primary data was qualitative research involving in-depth interviews with sixteen Hungarian entrepreneurs who have experienced business failure.

The paper is divided into four sections. It begins with a presentation of the proposed categorization system with an overview of the theoretical background and Hungarian context of entrepreneurial failure. The second section gives an overview of the research methodology and sample. The third part presents the results of current qualitative research, with ongoing discussion. The fourth section focuses on how researchers can use the proposed categorization to determine the severity of failure experiences or identify potential connections between failure categories. Finally, the study closes with a short summary that draws together key findings, presents limitations, and suggests further research directions.

Categorizing the consequences of entrepreneurial failure

During two decades of entrepreneurial failure research, many research groups have aimed to explore and categorize the potential consequences of failure. However, these impacts can vary in direction and longevity and appear at different levels (individual, organizational, economic/societal), which can require different methodological approaches (Klimas et al., 2021). The research consensus is that, in most cases, failure has not only financial but psychological impacts on the entrepreneur's life (Cope, 2011; Jenkins et al., 2014; Shepherd, 2003; Shepherd & Cardon, 2009; Shepherd et al., 2009; Singh et al., 2007; Ucbasaran et al., 2013). Moreover, failure can decrease entrepreneurial intention, causing entrepreneurs not to re-enter entrepreneurship (Cardon et al., 2011; Shepherd, 2003; Singh et al., 2015; Yamakawa et al., 2015). Furthermore, failures can negatively impact entrepreneurs' physical health (Cope, 2011; Corner et al., 2017; Singh et al., 2007).

However, it must be stated that not all consequences are negative; failure can have positive effects, too (Jenkins et al., 2014; Shepherd & Haynie, 2011; Riar et al., 2021; Ucbasaran et al., 2013). These positive and neutral consequences become more visible if researchers extend the investigation timeline (Klimas et al., 2021).

Categorization system building

There are different theories in the literature about how we can categorize the consequences of entrepreneurial failure. In a more recent categorization system, direct and indirect effects and long-term outcomes are distinguished (Klimas et al., 2021). Most prior studies have focused on the direct effects of failure, which may be immediate, detrimental, temporary or interpreted on an individual level. Three categorizations of consequence stand out. In Table 1, comparison is presented between them and the proposed categorisation (dashes indicate deficiencies in a category).

Table 1
Comparison of main categorizations of consequences of failure compared to the proposed model

Singh et al. (2007)	Cope (2011)	Ucbasaran et al. (2013)	Proposed categories
economic	financial	financial	financial
	professional	social (1)	professional
–	entrepreneurial	psychological (1)	psychological
–	–		
psychological	emotional		
social	social	social (2)	social
–	–	–	legal
physiological	physiological	psychological (2)	physiological

Source: own compilation

Singh et al. (2007) identify four well-defined simple categories, but this approach lacks part of the psychological (it mainly covers emotions), professional, and all legal consequences. Cope (2011) used six very different types, which nearly cover all consequences (except for legal and some part of psychological consequences), but in some cases, these categories overlap a little. Ucbasaran et al. (2013), using a different approach, attempted to cover all consequences using three bigger categories: financial, social (covering private and professional relationships and business prospects) and psychological (this contains emotions, motivational changes, and even physiological consequences). However, this third categorization lacks legal consequences and neglects physiological ones. Moreover, legal consequences have received less emphasis in the literature but are explicitly treated in a study by Repisky (2018). In conclusion, the current study proposes six main categories (Table 1): financial, psychological, social, professional, legal, and physiological consequences. In the following subchapter, previously explored consequences are classified using the proposed categorization system, regardless of whether they involve negative, neutral or positive impacts.

Summarizing consequences of entrepreneurial failure

Financial consequences affect the financial situation and prospects of the entrepreneur and their family. These consequences may occur at different severity levels. The least serious is a decrease in the financial well-being and income of the entrepreneur and their family (Fang He & Krähenmann, 2021; Jenkins et al., 2014; Jenkins & Wiklund, 2012; Shepherd et al., 2009; Singh et al., 2007; Ucbasaran et al., 2013). A more severe consequence is when the entrepreneur and their family lose their savings (Cope, 2011; Fang He & Krähenmann, 2021; Repisky, 2018; Shepherd et al., 2009; Shepherd & Patzelt, 2017) and/or their investments (Jenkins & Wiklund, 2012). Finally, a more severe consequence is when entrepreneurs get into debt, regardless of whether the loan comes from a bank or friend, because this may affect the entrepreneur's life for years or even decades (Cope, 2011; Fang He & Krähenmann, 2021; Jenkins et al., 2014; Jenkins & Wiklund, 2012; Singh et al., 2007). However, financial difficulties do not necessarily occur; many entrepreneurs do not suffer financially after failure (Fang He & Krähenmann, 2021).

Psychological consequences include every impact on an entrepreneur's psychological characteristics and functioning. This is the most diverse category, and current theoretical research proposes three subgroups: 1) emotional consequences, 2) changes in personality traits, and 3) changes in general confidence and self-efficacy. There may be various emotional consequences: grief (Cope, 2011; Corner et al., 2017; Jenkins et al., 2014; McGrath, 1999; Repisky, 2018; Shepherd, 2003; Shepherd et al., 2009; Singh et al., 2007; Ucbasaran et al., 2013; Wennberg & DeTienne, 2014); fear (of the unknown: Ucbasaran et al., 2013; of the financial situation: Jenkins et al., 2014); others may feel guilty about employees who have been laid off (Cope, 2011; Fang He & Krähenmann, 2021; Singh et al., 2015) or that investors did not get their money back (Cope, 2011); disappointment (Fang He & Krähenmann, 2021; Riar et al., 2021; Williamson et al., 2022); and even depression (Riar et al., 2021; Singh et al., 2007; Ucbasaran et al., 2013). However, entrepreneurs can feel positive emotions after failure, but usually not together with negative ones (Byrne & Shepherd, 2015). A common positive emotion is relief associated with getting rid of a burdensome enterprise (Fang He & Krähenmann, 2021), which can decrease entrepreneurs' stress levels (Khelil, 2016). In the aftermath of failure, the risk-taking propensity of entrepreneurs can decline (Cope, 2011; Klimas et al., 2021) or increase (Cardon et al., 2011), while they may lose faith in their internal locus of control (Repisky, 2018). Failure can have a negative effect on entrepreneurs' self-efficacy (Cardon et al., 2011; Cope, 2011; Corner et al., 2017; Klimas et al., 2021; Shepherd, 2003; Ucbasaran et al., 2013), general self-confidence (Cope, 2011; Jenkins et al., 2014; Shepherd, 2003; Singh et al., 2015) or self-view (Hwang & Choi, 2021; Shepherd & Haynie, 2011). However, in other cases, entrepreneurs may increase their self-efficacy and resilience due to failure (Cardon et al., 2011; Klimas et al., 2021).

Social consequences affect entrepreneurs' personal relationships (not professional and business relationships). Social consequences can involve three territories: entrepreneurs' families, friendships, and the wider community. Failure can strain an entrepreneur's relationship with their family (Fang He & Krähenmann, 2021); or even lead to divorce (Cope, 2011; Fang He & Krähenmann, 2021; Singh et al., 2007). Entrepreneurial failure can lead to challenges to or the loss of the role of the head of the family (Repisky, 2018). Moreover, entrepreneurs can lose the respect of their friends (Singh et al., 2007) or even some friends after failure (Corner et al., 2017; Fang He & Krähenmann, 2021; Repisky, 2018). However, some entrepreneurs may positively evaluate the loss of some 'friendships of interest' if such 'friends' were only there for the money or status (Repisky, 2018). Sometimes entrepreneurs may feel lonely because there is no one to ask for help (Cope, 2011; Corner et al., 2017; Singh et al., 2007). They may feel that they have failed to meet the expectations of society, which may amplify the emotional consequences (Riar et al., 2021). Several studies have shown that entrepreneurs can be stigmatized after failure in both their personal and professional relationships; they can be branded with the stigma of being a "failed entrepreneur", suggesting that they are not competent enough to be entrepreneurs and they should not re-enter into entrepreneurship (Hwang & Choi, 2021; Jenkins et al., 2014; Klimas et al., 2021; Shepherd & Haynie, 2011; Simmons et al., 2014; Singh et al., 2015; Ucbasaran et al., 2013; Wakee et al., 2014; Wiesenfeld et al., 2008). However, it is interesting that in some cultures, the opposite happens; entrepreneurs who have experienced failure are seen as more experienced and wiser, so failure can be seen as a "badge of honour" (Simmons et al., 2014).

The consequences affecting entrepreneurs' businesses, professional relationships, recognition, prospects, and career paths can be classified as *professional consequences*. One of the most common consequences within this category is the loss of entrepreneurial intention (Cardon et al., 2011; Klimas et al., 2021; Repisky, 2018; Shepherd, 2003; Singh et al., 2015), and for some entrepreneurs, it becomes a necessity and not a choice to become an employee (Cope, 2011; Repisky, 2018). Furthermore, entrepreneurs' business and professional relationships can weaken or break during and after failure (Cardon et al., 2011; Cope, 2011; Fang He & Krähenmann, 2021; Klimas et al., 2021; Repisky, 2018; Shepherd et al., 2009; Singh et al., 2015; Ucbasaran et al., 2013). Previously mentioned stigma in the professional field can decrease entrepreneurs' chances of obtaining future employment and assignments or finding new business partners (Cardon et al., 2011; Klimas et al., 2021; Repisky, 2018; Simmons et al., 2014; Singh et al., 2007; Singh et al., 2015; Ucbasaran et al., 2013; Wiesenfeld et al., 2008), but entrepreneurs are not always stigmatized (Cope, 2011). However, according to Rieger et al. (2022), failed entrepreneurs are more liable to be hired in the corporate world than graduates who start their careers in a corporation, but failure after a long period of entrepreneurial activity (e.g., eight years) can have the opposite effect.

Legal consequences have not been the focus of entrepreneurial failure researchers. However, laws related to business closure have been researched as factors that can increase or decrease other consequences of failure (Cardon et al., 2011; Cotterill, 2012; Fang He & Krähenmann, 2021; Ucbasaran et al., 2013). In this category of consequences are effects like court and liquidation proceedings and being prohibited from occupying a CEO position (Repisky, 2018).

The last category includes different *physiological consequences* that affect an entrepreneur's physical health; however, there is a shortcoming in research into the health-related outcomes of entrepreneurial failure (Shepherd & Patzelt, 2017). Pearlman et al. (2015) summarizes how numerous studies have confirmed that job loss negatively affects self-rated mental and physical health, and self-rated health is linked to various objective health measures. Stressors cause allostatic load, and if this is left unresolved, it can lead to the "wear-and-tear" of inflammatory, metabolic, and cardiovascular systems, and self-employed people experience higher levels of allostatic load (Patel et al., 2019). Moreover, the psychological literature has established a strong link between grief and depression, anxiety-related disorders, increased visits to the doctor, poor physical health and a higher risk of mortality (Shepherd & Patzelt, 2017), and grief is a common consequence of entrepreneurial failure. Furthermore, when entrepreneurs attribute problems to their stable shortcomings, this can increase their ill-being (Williamson et al., 2022). Despite all these claims, it must be stated that, the connection between failure and health problems is reported by interviewees, not medical experts. Physiological consequences can have four levels of severity: symptoms that can be treated at home, medical supervision or, hospital care is required, and suicide. In previous researches, the following symptoms were attributed by research participants to failure: insomnia, weight loss, general exhaustion (Singh et al., 2007), high blood pressure (Cope, 2011), panic attacks (Singh et al., 2007), an overactive bladder, and the onset of early menopause and thyroid disorders (Corner et al., 2017). Some entrepreneurs even needed medical supervision due to the use of stronger antidepressants and medications (Corner et al., 2017) or hospital care due to symptoms such as a slow heart rate and abnormal breathing (Singh et al., 2007). The last consequence, suicide, is the most serious one and has been explored in Japan (Yamakawa & Cardon, 2015) and South Korea (Hwang & Choi, 2021). However, some interviewees claimed to have "only" thought about taking their own life in research in Switzerland (Fang He & Krähenmann, 2021) and New Zealand (Corner et al., 2017).

Portfolio and serial entrepreneurship can affect the consequences of failure. Portfolio entrepreneurs diversify their financial risks and can better handle the financial consequences of failure (Fang He & Krähenmann, 2021; Jenkins et al., 2014; Ucbasaran et al., 2013; Wennberg et al., 2010). While portfolio entrepreneurs can more easily detach themselves emotionally from lost enterprises (Ucbasaran et al., 2010), serial entrepreneurs are emotion-

ally connected to only one business at a time and may have more intense emotions about them (Shepherd et al., 2009; Simmons et al., 2014; Ucbasaran et al., 2010; Ucbasaran et al., 2013). Moreover, in the case of portfolio entrepreneurs, other business(es) can help to reset entrepreneurs' self-esteem and sense of independence faster (Jenkins et al., 2014). Serial entrepreneurs' previously successful businesses can help them endure psychological consequences because they can build on past successes (Cope, 2011; Jenkins et al., 2014; Klimas et al., 2021; Ucbasaran et al., 2013). However, serial failures are more liable to shake the entrepreneur's self-confidence because they feel that such failures are not anomalies (Ucbasaran et al., 2013). Moreover, Jenkins et al. (2014) added that the key is not the number of past failures but how well entrepreneurs coped with them; if they coped successfully with failure, they tend to re-enter entrepreneurship.

To summarize prior studies about the consequences of failure, the dominance of negative consequences is obvious, even if some neutral and positive effects may be identified. Moreover, if the entrepreneur does not deal with these diverse consequences in a complex way, due to the interconnections of the consequences, they may end up in a downward spiral, from which it will be increasingly difficult to recover (Fang He & Krähenmann, 2021).

The Hungarian context

Hungary was under the influence of the former Soviet Union and today is a member of the European Union. Both systems have impacted Hungarian economic, political, cultural and social systems, so there is now a mixture of Eastern and Western standards and values (Dvouletý & Orel, 2020; Falkné Bánó, 2015). This transformation has influenced educational systems "and turned out [to be] one of the pillar stones of growing entrepreneurial intentions in the region" (Dvouletý & Orel, 2020, p. 448). However, Hungarian students may lack the necessary knowledge about the critical factors of self-employment and its risks (Dvouletý & Orel, 2020), which can increase the failure rate. In Hungary, only a third of people (36%) feel they have the right knowledge, skills, and experience to start a business, which rate is the lowest in the whole region (Csákné Filep et al., 2022). According to data from the Hungarian Central Statistical Office (2022), the three-year survival rate of Hungarian enterprises was 58.6% in 2018, and the ten-year average was 53.4%, which is similar to in other developed countries (Artinger & Powell, 2016; Atsan, 2016; Corner et al., 2017; Fang He & Krähenmann, 2021; Silver, 2015).

Many researchers have confirmed that formal institutions can influence entrepreneurial intentions and risk-taking (Cardon et al., 2011; Cotterill, 2012; Fang He & Krähenmann, 2021; Prusak et al., 2022) and the financial consequences of failure and re-entry (Prusak et al., 2022; Ucbasaran et al., 2013). The severity of bankruptcy laws can be entrepreneur-friendly by reducing or eliminating personal liability, supporting faster re-entry (Ucbasaran et al., 2013), and providing government training and support programs for failed entrepreneurs (Hwang & Choi, 2021),

or it can increase the difficulty of restarting by requiring the registration of bankruptcy in public databases along with the credit history of the entrepreneur (Fang He & Krähenmann, 2021). In Hungary, limited liability companies are common; however, there are no support programs for failed entrepreneurs, and there is a database that contains details about the history and owners of enterprises.

However, the aims of formal and informal institutions can strengthen or contradict each other (Welter & Smallbone, 2011), which means that social norms can influence laws, and formal institutions can impact people's acceptance of business failure (Ucbasaran et al., 2013; Welter & Smallbone, 2011). The mediator between these factors may be the media; the latter has a privileged role in shaping attitudes towards entrepreneurs because it not only reports on specific events but can shape public opinion (Szerb & Kocsis-Kisantal, 2008). In 2005, in two Hungarian daily magazines that were analysed, relatively few articles dealt with failures and bankrupt businesses (Szerb & Kocsis-Kisantal, 2008). Between 2015 and 2019, the general tone of four mainstream Hungarian online magazines' articles about entrepreneurs was positive in 26.4% of cases, neutral in 41.2% and negative in 32.4%. Interestingly, the media representation of foreign companies in Hungary was found to be two-and-a-half times less negative than that of domestic Hungarian ones (Virágh & Szepesi, 2022). Looking at the ten-year average (2007-2016), one-third of Hungarians reported reading stories about successful entrepreneurs in the media, while the average is nearly 50% in Central and Eastern Europe – CEE (GEM, 2017). After a four-year hiatus, according to the most recent data (2021), Hungary had caught up, scoring 65% on this indicator (Csákné Filep et al., 2022).

Half of surveyed Hungarians agree that entrepreneurs have high social status (47.6%) and that being an entrepreneur is a desirable career choice in Hungary (47.9%), and a quarter of them think the opposite or “do not know” (Csákné Filep et al., 2022). According to a survey by the European Commission (2012), 82% of respondents in the EU would give a second chance to entrepreneurs who had failed (in several countries, this proportion exceeds 90%), and even in the CEE region, the proportion is 78%. However, in Hungary, 69% of respondents would give an entrepreneur a second chance, the second lowest value in Europe and the third lowest worldwide. This suggests that in Hungary, failure with an enterprise is more likely to lead to stigmatization, while in other more forgiving countries, failure can be seen as a “badge of honour” (Simmons et al., 2014) – like in the USA (Cotterill, 2012; Klimas et al., 2021).

In more collectivistic cultures, failures are less forgivable than in individualistic ones because failure can be considered a waste of social and economic assets (McGrath, 1999). In Hungary, findings about this are controversial (Falkné Bánó, 2015); according to an estimation by Hofstede (2015), Hungarian culture is individualistic (80 - higher value means more individualistic culture), but according to Varga's (2008) research with more than 1,000 employees, it is collectivistic (11). The CEE average

is 40 (Hofstede, 2015). However, another relevant cultural dimension is uncertainty avoidance, which scored nearly the same in both datasets (Hofstede: 82; Varga: 83 - higher value means increased uncertainty avoidance) and was almost equal to the CEE average (80), which means Hungarians tend to prefer security and are less tolerant of innovation and experimentation (Hofstede, 2015), which can make people less tolerant of failure (Rieger et al., 2022). The situation that “Hungarian society lacks trust” probably does not help – a phenomenon which is generally true of post-socialist countries (Tóth, 2010; p. 259). On the other hand, fear of failure would prevent only 38.2% of Hungarians from starting a business, one of the lowest values in Europe (Csákné Filep et al., 2022).

Methodology and sample

In this brief chapter, the methodology and an introduction to the sample are presented. Before diving into this chapter, entrepreneurial failure should be defined. During this research, *entrepreneurial failure* was defined as when an entrepreneur leaves their business or closes it because it did not meet their expectations or due to a decisive external factor. This definition of failure fits well with the emotive approach formulated by Khelil (2016), covering the ‘involuntary exit’ part of his typology.

Methodology

The research objective was to build a useable categorization system for the consequences of entrepreneurial failure and validate this with semi-structured, in-depth interview-based narrative research in Hungary. A narrative research design was chosen because it helps to understand how processes and events unfold temporally; to obtain insight into people's thoughts, emotions and interpretations; to understand their perspectives better, and because data was rare and sensitive (Corner et al., 2017).

Entrepreneurial failure researchers face unique challenges: it is hard to find entrepreneurs who have experienced failure (Cotterill, 2012; Jenkins et al., 2014; Khelil, 2016); entrepreneurs tend to reject participation in research (Byrne & Shepherd, 2015; Hwang & Choi, 2021; Jenkins et al., 2014; Riar et al., 2021), and researchers can usually only undertake retrospective interviews years after failure events, which can create bias in data (Byrne & Shepherd, 2015). In order to mitigate some of these challenges and speed up trust building, the snowball (recommendation-based) sampling method was applied because it can increase willingness to respond (Cope, 2011; Corner et al., 2017; Khelil, 2016), and it is ideal for hard-to-reach interviewees (Khelil, 2016). To prevent getting stuck within one network of connections, thirty-three people were asked for recommendations. Recommenders were primarily entrepreneurs and privileged witnesses (Khelil, 2016) who were directly connected with failed entrepreneurs because of their profession (consultants, accountants, employees of the chamber of industry or entrepreneurial networks). The criteria for selecting interviewees was fitting the definition of applied failure,

which was checked with a short phone call. Following the recommendations, twenty-three entrepreneurs gave positive feedback about their participation; however, for different reasons (e.g., lack of time, sickness and death in the family), seventeen interviews were implemented between April and September of 2021. The interview thread was tested in three rounds before the research. It had three main sections, similar to the approach of Byrne and Shepherd (2015) and covered a more extensive area of entrepreneurial failure than described in this paper. The first part of the interview was about building trust and tuning in (typical themes were entrepreneurial experience, starting motivations, and the scope of business). The second section included the hardest themes of failure, consequences, and coping, involving going through each of the six categories of consequences one by one. The last section focused on lessons learned and career choices after failure.

From the seventeen interviews that were recorded, sixteen were used in the analysis because one interview included too little relevant information. Analysis was undertaken in four stages. In the first phase, the literature was ignored, and open coding was used to break down raw data into handleable information, and memos were written about the potential connection between codes (Corbin & Strauss, 2008). In the second section, similar codes were grouped to distinguish only significantly different ones, which made them more abstract. The main aim of the third phase was to locate each abstracted code in one of six categories of consequences. The aim of the last section was to undertake a comparative analysis (Corbin & Strauss, 2008); here, a comparison of cases and the formulation of potential connections between consequences were undertaken. In critical parts of the last three sections, a second opinion (another researcher) was involved to mitigate the researchers' subjectivity and triangulate results. Researchers cannot be present when failure happens to examine entrepreneurs' emotions or connections between failure and physiological symptoms, so relying on interviewees' reports is a limitation.

Introduction of sample

The sample included sixteen entrepreneurs with significant entrepreneurial experience (average 16.2 years), several of whom had already had more than twenty years of entrepreneurial experience at the time of the interview (interviewees 4, 6, 12, 14, and 16). The sample was diverse regarding the number of managed enterprises; in some cases, the failed enterprise was the first and last company of the entrepreneur (7, 10, 15), although several portfolio entrepreneurs could not even say how many enterprises they had been involved in so far (2, 4, 8, 16).

In the sample, the failed enterprises were micro and small companies, but they were very diverse in terms of operating industry and duration of operation (from 0.5 years to 25 years). Nine analysed failures occurred in the last five years; five failures occurred between five and ten years ago, and two failures happened more than ten years before the interview.

Four types of failure were distinguished based on elements of the definition of failure: nine enterprises went bankrupt; four did not meet the entrepreneur's expectations and goals (e.g., not enough profit; problematic business partner); two product-developing start-up companies failed to obtain investment, and in one case an external factor forced the entrepreneur to exit (regarding the distribution of property). The explored cases were very diverse, which can be a positive characteristic of exploratory, qualitative studies, according to Byrne and Shepherd (2015).

Validation of the categorization of consequences

The presentation of results is divided into two chapters. In the first chapter, every explored consequence of failure was placed into the previously proposed categorization system to see if any modification was needed. During this validation phase, summary tables were created for the six categories of consequences to show which consequences confirmed prior research and which complemented them. The second chapter summarises the potential use of this categorization system (exploring connections between consequence categories and classifying the severity of failure experiences).

Financial Consequences

Among the *negative financial consequences*, the most common and obvious was decreased income (1, 6, 8, 10, 12, 14), and some entrepreneurs had experienced significant financial loss (4, 8). A decrease in well-being appeared at different intensities; some entrepreneurs only had to manage their finances more consciously after failure (10), while for others, their daily livelihood had been put in danger (6, 8). The case of the eighth interviewee shows how serious this could be: "...there was a period when I didn't buy *kiflis* (crescent-shaped bread rolls) but a quarter kilogram of bread because it was much better value for money..."; "My total assets were a few hundred forints" (equivalent to a few euros); "I travelled without a ticket on the tram..., because I didn't have money for [one]". Another common financial consequence was the loss of the personal savings of the entrepreneur (1, 2, 8), or the whole family (10), or even an inheritance (8). Many entrepreneurs went into debt because of failure. Some of them asked for loans from friends (8, 15), from a bank (5), or even went into debt as a private person and company (8, 15).

A more common novel consequence was that financial capital was stuck in businesses, and entrepreneurs could not recover it. 'Stuck' capital can be accumulated in the form of unsaleable assets (3, 15), software purchased for services (1), or money invested in the renovation of rented business premise (2). Another newly explored financial consequence is that a part of the entrepreneurs' wealth was lost due to the process of redistributing property, which is associated with various costs and fees: "...it's not 50-50, but say 40-40..." (5).

Even though failure resulted in a net loss for several entrepreneurs (8, 13, 16), there were also those who did not suffer from financial consequences, or only minimally (7, 11, 12, 14), or the financial effects of failure did not affect their family's wealth (3, 13). In such cases, the *financial consequences* can be interpreted as *neutral*. But, interestingly, in some cases, *positive financial consequences* were identifiable. For example, three entrepreneurs closed their businesses with a positive overall financial balance (9, 12, 14), and one entrepreneur positively assessed that a closed company would not consume additional capital in the future (4) (Table 2).

Table 2
Explored financial consequences

Impact	Consequences	Occurrence	
		Previous research	Current research
Negative	Decrease in income	x	x
	Decrease in financial well-being	x	x
	Losing of savings	x	x
	Going into debt	x	x
	Financial capital stuck in the company		x
	Capital lost during distribution of property		x
Neutral	Minimal or no financial consequences	x	x
	Failure does not affect family's wealth		x
Positive	Exit with positive financial balance		x
	Lost companies do not consume further capital		x

Source: own compilation with reference to previous research: Cope (2011); Fang He & Krähenmann (2021); Jenkins et al. (2014); Jenkins & Wiklund (2012); Repisky (2018); Shepherd et al. (2009); Shepherd & Patzelt (2017); Singh et al. (2007); Ucbasaran et al. (2013)

Psychological Consequences

The psychological consequences of failure are the most diverse, and it is not a coincidence that this is the central area of research. After theoretical analysis, three subcategories were proposed: 1) emotional consequences, 2) changes in personality traits, and 3) changes in general confidence and self-efficacy. The most dominant group of adverse psychological consequences occurs with emotions, so some researchers (like Cope, 2011) even handle them separately.

The various emotions that were explored were aggregated into more abstract concepts for simplification.

- Emotions before failure happened: anger (3), sadness about losing the company (1) or about dismissed employees (14), hope (3) or lost hope (10).
- Negative emotions because of the loss of a company: grief (1, 3, 4, 10, 12), which can turn into depression according to interviewees (1, 8); they felt

they had “*mentally fallen to the floor*” (1, 4, 8, 15); or the experienced of failure as a traumatic event or a breaking point in their lives (1, 5). Two interviewees directly compared the loss of their businesses to the loss of a loved one (1, 4): in Interviewee 1's words: “*...the two can't be compared to each other, but still a little, it's similar to when someone loses a close relative. Processing this strong loss, it all starts with trauma; it also happened very quickly and took a toll on me.*”

- Anxiety and fear manifested in the form of concerns about financial security (1, 6, 8), fear of uncertainty (1), or struggling with uncertainty (6).
- Negative emotions because of dismissed employees: sadness, worry and a sense of responsibility (2), a feeling of non-compliance (8), or in the second interviewee's words: “*...what was difficult about it was the personal attachment to people and a feeling of responsibility for them, and the failure associated with this.*”
- Burden of the loss of some friends (4).
- Increasing stress led to nervousness (12), tension and irritation (1).
- Negative feelings due to lost opportunities: regret about not seeing their product “*takes its first steps*” (13) or see the company grow and become profitable (9).
- Mental burden due to debts: One interviewee (15) felt guilty because he could not repay a loan to his friends.
- Entrepreneurs disappointed in their entrepreneurial life (5), in their business partner (3), and disappointment that doubters were right (13).

Interestingly, no observable consequences caused changes in entrepreneurs' personality traits. *Wavering self-confidence* is widely studied in the literature. However, this emerged only with Interviewee 1. Compared to the literature, a new subcategory of consequences appeared: “*... and my image of life and values to that point was turned upside down...*” (8).

In some cases, there were no psychological consequences; four entrepreneurs said that failure did not affect them emotionally (7, 11, 14, 16), and another said that he had recovered very quickly from an emotional perspective (3).

Some *positive psychological consequences* that are identified in the literature did not emerge in the current research. However, a sense of relief was observed as a positive emotional consequence (2, 13, 14, 15). This is how Interviewee 2 formulated this: “*So the first feeling was sadness, then obviously there was great relief that this was not my problem from then on.*” Interviewee 14 had feelings about something more specific; he was relieved that he no longer had to deal with COVID-19 and the related regulations. According to the family of Interviewee 10, he became “*more smooth and calm*” after the failure. Furthermore, the initially negatively experienced value crisis of Interviewee 8 was transformed in a positive direction within a few years (Table 3).

Table 3

Explored psychological consequences

IMPACT	SUBCATEGORY	CONSEQUENCES	OCCURRENCE	
			PREVIOUS RESEARCH	CURRENT RESEARCH
Negative	Emotions	Hopelessness (before failure)		X
		Sadness, anticipatory grief (before failure)	X	X
		Anger (before failure)		X
		Feeling of loss, grief	X	X
		Anxiety and fear due to uncertainty	X	X
		Negative emotions because of dismissed employees	X	X
		Mental burden of losing some friends		X
		Increasing stress led to nervousness and irritated mood	X	X
		Negative feelings due to lost opportunities		X
		Mental burden due to debts		X
		Feeling guilty that investors did not get their money back	X	
		Disappointment	X	X
	Personality	Lost faith in internal locus of control	X	
	Self-confidence	Decrease in entrepreneurial self-efficacy	X	
Decrease in general self-confidence		X	X	
Personal values	Shattering personal value system, believes		X	
Neutral	Emotions	Hope that failure can be avoided	X	X
		Failure had no emotional effect		X
		Fast emotional recovery	X	X
Personality	Change in risk-taking propensity (increase or decrease)	X		
Positive	Emotions	Relief	X	X
		Become more calm		X
	Personality	Increased resilience	X	
	Self-confidence	Increase in entrepreneurial self-efficacy	X	
	Personal values	Positive change in personal values and view of world		X

Source: own compilation with reference to previous research: Byrne & Shepherd (2015); Cardon et al. (2011); Cope (2011); Corner et al. (2017); Fang He & Krähenmann (2021); Hwang & Choi (2021); Jenkins et al. (2014); Khelil (2016); Klimas et al. (2021); McGrath (1999); Repisky (2018); Riar et al. (2021); Shepherd (2003); Shepherd et al. (2009); Shepherd & Haynie (2011); Singh et al. (2007); Singh et al. (2015); Ucbasaran et al. (2013); Wennberg & DeTienne (2014)

Social Consequences

Social consequences only impact entrepreneurs' personal relationships, not professional or business ones. However, *negative consequences* related to the entrepreneurs' families and roles were so prominent that differentiating between consequences that affected the entire family and only the entrepreneur's spouse might be useful.

Consequences affecting entrepreneurs' families appeared in different forms: parental fear and worry (8, 15), tension caused by failure that spilled over into family life (1), and one male entrepreneur reported a 'wobble' in his role as head of the family (6). The surprising new consequence was that two children of one entrepreneur had put aside their studies/work and rushed to help her, which created tension within the family because other family members thought the children had sacrificed their own lives to save their mother (3). Another newly discovered consequence was that in one case, "...[a child of an entrepreneur] had to be sent to nursery and couldn't stay at home

with his mother until he is three years old because the mother had to go back to work", which might be a natural situation for others, but was contrary to their goals (10). Two consequences that impacted entrepreneurs' spouses were identified: debates between a husband and wife about the closure of their company (11) and an entrepreneur who was worried about his wife because it was more difficult for her to let go of their enterprise (3).

Diverse effects on friendships were also explored; some friends left one entrepreneur after the latter's failure, which caused sadness (4), there were too many expressions of regret from friends (3), and friendships were slightly overshadowed by the fact that one entrepreneur owed them money for eight years, but luckily these relationships did not become hostile (15).

Not all the social consequences identified in the literature emerged in this research, but the absence of one stands out: stigmatization, because this is a significant area of research in entrepreneurial failure studies, and the Hungar-

ian context also indicates its existence (EC, 2012). When I asked about stigmatisation, several interviewees reported that they did not perceive any change in attitude towards them (3, 10, 16), and some also added that they did not perceive any change in their friendships (2, 5, 7, 13, 16).

Moreover, the current research complements the literature due to the identification of several *positive consequences*, such as “*tangential ‘street’ connections*” transforming into friendly helpers after failure (4), more time for family and children (14), and losing ‘friends of interest’ who were friends only for the status or financial benefits (14) (Table 4). Another interesting new positive consequence was identified by Interviewee 9: “*My wife has always been a public servant, so she acknowledged entrepreneurs but always preferred a secure existence – a fixed monthly income – so she was really happy when I started working at the new place as an employee.*”

Professional Consequences

Professional consequences can impact an entrepreneur’s business and professional relationships, recognition, ca-

reer path and future business prospects. The most common professional consequence was that entrepreneurs had to terminate harmful business relationships. Most entrepreneurs attributed this termination as negative (3, 9, 15) but, in one case, as positive (8). The betrayal of Interviewee 15’s business partner reached a point where the interviewee’s trust in clients wavered as well. Other consequences for entrepreneurs’ business relationships included the following: users complained about the unavailability of their software (7), former colleagues began to avoid them (1), and during business failure, a former colleague started working for their competitor, affecting the entrepreneur’s general trust in others (1).

Among the consequences that impacted career paths, the most common consequence was that entrepreneurs had to become employees after failure, primarily for financial reasons (5, 8, 10, 15). Moreover, one entrepreneur lost their entrepreneurial intention and reported that they would prefer to work as employee in the future (6). Another reported consequence was after failure, the entrepreneur was confused about what to do or start next (10).

Table 4

Explored social consequences

IMPACT	SUBCATEGORY	CONSEQUENCES	OCCURRENCE	
			PREVIOUS RESEARCH	CURRENT RESEARCH
Negative	Family	Parental fear and worry		x
		Tension caused by failure spilled over into family life	x	x
		Wobble of the role as head of family		x
		Family conflicts, because of family members rushing to help the entrepreneur		x
		His wife cannot stay home with the child, they had to send child to nursery school		x
	Spouse	Debates with spouse	x	x
		Divorce because of failure	x	
		Worrying about his spouse because she was fulfilled in the business		x
	Friendships	Declining, weakening friendships	x	x
		They are left alone, no one to ask for help	x	
		Too many regrets from friends		x
		Losing the respect of their friends	x	
		Debts overshadows friendships		x
	Wider community	Negative change in attitudes towards them in their private lives (stigmatisation)	x	
		Failure to meet social expectations	x	
Neutral	General	No change in attitudes towards him/her in private relationships	x	x
	Friendships	No change in his/her friendships		x
Positive	Family	More time for the family and children		x
	Spouse	His wife was happy that he would rather be an employee than entrepreneur		x
	Friendships	Losing friends of interest		x
	Wider community	Tangential connections were transformed into friendly helpers		x

Source: own compilation with reference to previous research: Cope (2011); Corner et al. (2017); Fang He & Krähenmann (2021); Hwang & Choi (2021); Jenkins et al. (2014); Klimas et al. (2021); Repisky (2018); Riar et al. (2021); Shepherd & Haynie (2011); Simmons et al. (2014); Singh et al. (2007); Singh et al. (2015); Ucbasaran et al. (2013); Wakee et al. (2014); Wiesenfeld et al. (2008)

In the case of Interviewee 7, there were neutral (balanced) professional consequences because the entrepreneur could not respond to professional inquiries after the closure of his business. In some ways, he felt it was positive that he was still in demand, but at the same time, he had negative feelings that he could not respond.

ed. In the case of Interviewee 4, this meant an easier property distribution procedure, and in the case of Interviewee 6, the tax office procedure “*wasn't that bad; I expected much worse.*” Together, these results indicate the necessity of handling legal consequences as a separate group of consequences of failure (Table 6).

Table 5

Explored professional consequences

IMPACT	SUBCATEGORY	CONSEQUENCES	OCCURRENCE	
			PREVIOUS RESEARCH	CURRENT RESEARCH
Negative	Relationships	Termination of unfavourable business relationships	X	X
		Professional relationship network weakens	X	X
		Shaken trust in others because of betrayal		X
	Career path and business prospects	Decreased entrepreneurial intention	X	X
		Entrepreneur had to become employee after failure	X	X
		Confusion after failure about what to do next		X
		Hardship in finding new job or assignment	X	
Professional recognition	Professional devaluation (stigmatisation)	X		
Neutral	Career path and business prospects	Unable to respond to professional inquiries after closure, which caused negative feelings		X
	Professional recognition	No change in professional recognition	X	X
Positive	Relationships	Maintained good relations with former colleagues		X
		Termination of unfavourable business relationships		X
	Career path and business prospects	Serious job offers after failure		X
		Gained time for new project or other enterprises		X
	Professional recognition	Increased professional recognition	X	X

Source: own compilation with reference to previous research: Cardon et al. (2011); Cope (2011); Fang He & Krähenmann (2021); Klimas et al. (2021); Repisky (2018); Rieger et al. (2022); Shepherd (2003); Shepherd et al. (2009); Simmons et al. (2014); Singh et al. (2007); Singh et al. (2015); Ucbasaran et al. (2013); Wiesefeld et al. (2008)

Like with their private relationships, entrepreneurs were not devalued from a professional point of view, and one entrepreneur's professional recognition even increased (4). Other *positive professional consequences* were the following: an entrepreneur was offered a management position (4), one gained time for new projects (2), and one for working on another enterprise (13). In two cases, interviewees emphasized that they had maintained good relationships with their former employees (4, 9) or would even work for them again (9) (Table 5).

Legal Consequences

In prior studies, legal consequences were rarely addressed (Repisky, 2018), but in the current research, more *legal consequences* emerged: prohibition from being a CEO (8), years of litigation that required an expensive business lawyer (16), during liquidation, part of the entrepreneur's income was automatically deducted due to his debt (6), prolonged liquidation process due to a foreign subsidiary (13), and yearly returning debt collectors (15).

Surprisingly, two entrepreneurs talked about balanced, *neutral legal consequences*. Their opinion was that legal procedures were shorter and easier than they had expect-

Table 6
Explored legal consequences

IMPACT	CONSEQUENCES	OCCURRENCE	
		PREVIOUS RESEARCH	CURRENT RESEARCH
Negative	Prohibition from CEO position	X	X
	Years-long litigation, court proceeding	X	X
	Part of income is automatically deducted due to debts		X
	Prolonged liquidation due to foreign subsidiary		X
	Yearly returning debt-collectors		X
Neutral	Shorter and easier legal procedures than expected		X

Source: own compilation with reference to previous research: Repisky (2018)

Physiological Consequences

The sixth and last group of consequences are physiological ones. In the current research, only adverse effects emerged. However, eleven entrepreneurs did not mention adverse physiological effects, but based on this, it cannot be assumed that there were no negative or positive physiological consequences.

Table 7
Explored physiological consequences

IMPACT	CONSEQUENCES	OCCURRENCE	
		PREVIOUS RESEARCH	CURRENT RESEARCH
Negative	Symptoms that can be treated at home	x	x
	Symptoms that require medical supervision	x	x
	Symptoms that require hospital care	x	
	Suicide (only observable indirectly)	x	x

Source: own compilation with reference to previous research: Cope (2011); Corner et al. (2017); Hwang & Choi (2021); Singh et al. (2007); Yamakawa & Cardon (2015)

Most negative physiological consequences did not require hospital care: insomnia before failure (5), bad dreams due to debts (15), and morning and evening stomach cramps (1). However, the panic attacks (1, 6) and other unnamed symptoms of Interviewee 1 may suggest the need for medical treatment. One entrepreneur became physically ill and had to visit the doctor (4), although in her case, the loss of a business occurred together with a divorce, so the causality between failure and physiological symptoms is questionable. Physiological consequences can be very diverse (1): “I felt absolutely on the floor, I became depressed, I woke up and went to sleep with stomach cramps, I had panic attacks, all kinds of physical symptoms came over me, it was really bad.” Interviewee 14 reported that he had a friend who had committed suicide due to the bankruptcy of his business. I think it is important to include this consequence – even

though it did not happen to any of my interviewees – because it is the most severe consequence that can occur to an entrepreneur and cannot be observed directly (Table 7).

After presenting all six proposed categories of consequences of failure, a summary is shown in Figure 1, supplemented by twenty-four potential subcategories.

Potential use of proposed categorization

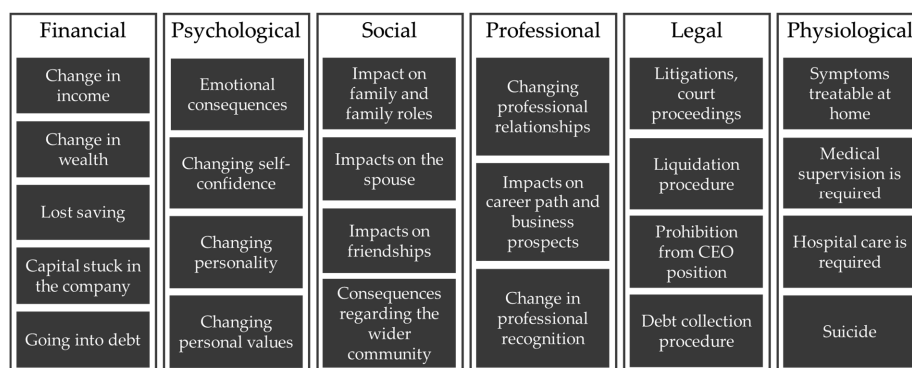
After proposing a new categorization of the consequences of failure, it is necessary to show how this can be helpful in research. Singh et al. (2007) implemented an exemplary use of their categorization of consequences. The latter not only categorized consequences but used their systemization to analyse differences in entrepreneurs’ coping mechanisms in relation to different categories of consequences and what entrepreneurs may learn in relation to these categories. Another good example of such an approach is the study of Fang He and Krähenmann (2021), who analysed the potential connections between different categories of consequences. In the following two subchapters, two potential uses of this categorization will be presented. First, potential connections between failure categories will be analysed, similar to Fang He and Krähenmann (2021). Second, a method will be proposed for evaluating the severity of failure experiences.

Connections between failure categories

Fang He and Krähenmann (2021) write that it is essential to analyse interconnections between various consequences of failure because if entrepreneurs do not manage them in a complex way, this can cause a downward spiral, from which it will be very difficult to recover. Moreover, this research explores root consequences that may intensify or cause many other consequences. From the analysis of data from sixteen interviews and the theoretical background of the consequences of failure, Figure 2 shows potential connections between categories of consequences. In Figure 2, regular arrows indicate potential links according to this research (grey=one-sided connection; black=two-sided connection), and dashed arrows indicate supplementary connections based on prior studies.

1. Figure

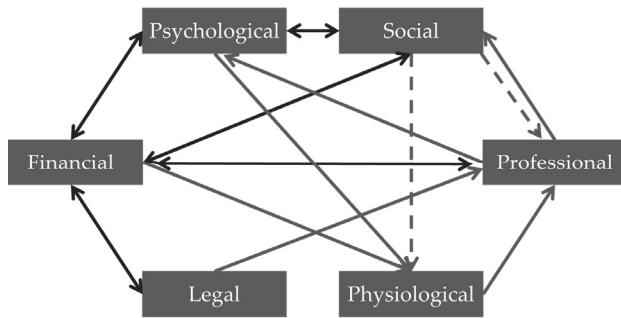
Categorization of entrepreneurial consequences of failure



Source: own compilation

Figure 2

Potential connections between consequence categories



Source: own compilation

Financial consequences can increase every other type of consequence: psychological (fear of financial security; guilt over unsettled loans from friends), social (mother can't stay home with her child; not being able to give a family 'what they deserve'; debts overshadow friendships), professional (not enough capital to start new enterprise), legal (yearly returning debt collectors) and physiological (insomnia and bad dreams due to debts; suicide due to financial loss; bankruptcy). However, financial consequences can also have positive social consequences because they lead to the end of relationships with 'friends of interest'.

Psychological consequences can have effects in three other categories: financial (attempts to avoid failure for psychological reasons), social (tension caused by failure spills over into family life) and physiological (most physical symptoms have strong psychological roots).

Social consequences can impact financial (family members and friends try to help financially, although sometimes this turns into unsettled debt) and psychological consequences (sadness because of lost friends).

Professional consequences can influence three other categories of consequences: financial (positive: job offers after failure), psychological (betrayal of business partner may be emotionally hard; negative or positive emotions due to broken business relationships) and social (e.g., an interviewee's wife was happy that in future he would be an employee, not an entrepreneur).

Legal consequences can affect financial- (deductions from the entrepreneur's income during liquidation; need for an expensive business lawyer) and professional consequences (prohibition from holding a CEO position for some years).

Last but not least, *physiological consequences* can impact the professional lives of entrepreneurs. In this research, some interviewees (1, 4) had to take a break because of their physical symptoms.

In relation to the theoretical background, most connections are confirmed and even supplemented by the current data. However, two connections between categories of consequences did not appear in the current dataset. Both of these connections are rooted in the lack of stigmatization identified in my interviews because stigmatization

was found to be a key consequence of failure in earlier research. Stigmatization can deter entrepreneurs from starting a business in the future (Cope, 2011; Fang He & Krähenmann, 2021; Jenkins et al., 2014; Simmons et al., 2014); can lead to discrimination against entrepreneurs in relation to job applications (Cope, 2011; Fang He & Krähenmann, 2021; Singh et al., 2015; Ucbasaran et al., 2013); destroy professional relationships (Fang He & Krähenmann, 2021); make it harder to build up capital in future (Ucbasaran et al., 2013) and recover from financial loss (Jenkins et al., 2014); can decrease the entrepreneur's self-confidence and risk-taking propensity (Fang He & Krähenmann, 2021); and can even lead to suicide (Yamakawa et al., 2015). Overall, it can be concluded that entrepreneurial failure has two *root consequences*: financial loss and stigmatization.

Classifying the severity of failure experiences

Another use of this categorization is evaluating failure for individual interviewees according to the categories of consequences and overall. This can contribute to more complex entrepreneurial failure studies that investigate the connection between consequences and coping, learning, or entrepreneurial re-entry. This study proposes a classification for evaluating the severity of failure (Figure 3): a positive effect is indicated in white; negative effects can be strong, moderate, or mild (shown in dark to light grey), neutral (very light grey) or balanced (also in very light grey), when negative and positive effects arise with approximately equal weight. In some cases, categories of consequences were not mentioned, or interviewees gave an evasive answer to related questions. In such cases, it was impossible to evaluate how this area had affected them (negative, neutral, balanced or positive), so these cells were left blank to avoid making such assumptions.

However, this method has limitations because most consequences cannot be quantified, and some degree of subjectivity is naturally present. Therefore, three methods were used to decrease researcher subjectivity:

1) Researcher triangulation by involving a second researcher's opinion in the case of less clear classifications.

2) Hsu et al. (2017) suggested that a similar loss of money can have severe or mild consequences for different entrepreneurs. This is why researchers should rely on interviewees' viewpoints. This idea was extended to all six categories of consequences, and each entrepreneur's reference points and life circumstances were taken into account.

3) A secondary aspect was that, in some cases, a number of mild consequences within a consequence category made it necessary to rate the whole category as moderate.

Figure 3 shows that entrepreneurs experience failure in very different ways; we cannot say there is a typical way of experiencing it, and we cannot say that it is a traumatic, very negative experience for everybody. Based on the analysis of sixteen interviews, four entrepreneurs experienced failure very negatively, three moderately, three mildly and six entrepreneurs in a neutral or balanced way. Moreover, for Interviewee 9, it was borderline whether it was positive or balanced.

Severity of consequences for each entrepreneur

	FINANCIAL	PSYCHOLOGICAL	SOCIAL	PROFESSIONAL	LEGAL	PHYSIOLOGICAL	OVERALL
1	Moderate	Strong	Mild	Mild		Moderate	Strong
6	Strong	Moderate	Moderate		Mild	Moderate	Strong
8	Strong	Strong	Mild	Moderate	Moderate		Strong
15	Strong	Strong	Mild	Strong	Moderate	Mild	Strong
4	Moderate	Strong	Balanced	Positive	Balanced	Moderate	Moderate
5	Strong	Strong	Neutral			Mild	Moderate
10	Moderate	Moderate	Mild	Moderate			Moderate
2	Mild	Mild	Neutral	Balanced			Mild
3	Mild	Moderate	Mild	Mild			Mild
12	Balanced	Moderate					Mild
7	Neutral	Neutral	Neutral	Mild			Neutral
11	Neutral	Neutral	Mild				Neutral
13	Mild	Balanced	Neutral	Positive	Mild		Balanced
14	Balanced	Neutral	Positive				Balanced
16	Mild	Neutral	Neutral		Moderate		Balanced
9	Positive	Mild	Positive	Balanced			Balanced

Source: own compilation

Another finding is that the most common consequences of failure are financial, psychological, and social. However, in half of the cases, professional consequences can occur, but legal and physiological consequences are rarer.

It is worth mentioning that those who had more than one source of income (portfolio and hybrid entrepreneurs who are also employees) at the time of failure experienced milder consequences than those who had only one business (serial entrepreneurs), which is consistent with prior research (Fang He & Krähenmann, 2021; Jenkins et al., 2014; McGrath, 1999; Shepherd et al., 2009; Simmons et al., 2014; Ucbasaran et al., 2010; Ucbasaran et al., 2013; Wennberg et al., 2010). This statement is valid in relation to three categories: financial, psychological, and professional consequences.

Summary and conclusions

The main objective of this study was to build a useable categorization system for the consequences of entrepreneurial failure. The previous chapter shows that the main objective and the four subgoals were met. The research was carried out using a qualitative, narrative research method.

The current research *contributes to the entrepreneurial failure literature* with some novel results. Prior classifications of the consequences of failure had some blank spots (primarily legal consequences), while the proposed categorization (six categories, with twenty-four subcategories) covers all explored consequences and is presented in the most transparent and detailed manner. Moreover, the literature usually focuses on negative consequences or long-term lessons as positive outcomes but rarely distinguishes consequences as negative, positive, neutral and balanced. Consequently, the current research significantly extends the list of potential positive, neutral and balanced consequences. Furthermore, evaluating categories of con-

sequences interviewee to interviewee is also a novel approach and helps shed even more light on how diversely entrepreneurs experience failure. In the current research, a non-negligible proportion of entrepreneurs experienced failure neutrally (it did not affect them significantly), or negative and positive consequences were balanced. During the analysis of potential connections between failure categories, two root consequences were identified (financial loss and stigmatization), which may have a key role in enhancing the severity of the failure. Researchers should keep in mind while designing research that some consequences can occur before failure happens (e.g. loss of savings, going into debt, and emotions like anticipatory grief).

However, as with every study, this one has some *limitations*. First, the main limitation is the reliability of interviewees' reports since entrepreneurs may not take responsibility for failure and distort related information (Cotterill, 2012); moreover, psychological factors and causal mechanisms are difficult to observe (Hsu et al., 2017) and during analysis, the researchers had to rely on what the interviewees said. The second limitation is that the research was carried out by one researcher, which can increase the subjectivity of qualitative studies. To mitigate this limitation, an experienced second researcher was consulted during the analysis. Finally, the sample is associated with several limitations: only Hungarian and mainly men entrepreneurs participated, and in several cases, a significant amount of time had passed between failure and interview, which can cause recall bias. However, in the case of hard-to-reach samples, this time lag may be acceptable, according to Corner et al. (2017).

Building on these results, there are two main directions for *future research*. First, researchers could undertake quantitative research using a large sample about how categories of consequences have mutual effects (increase

or mitigate each other's impacts). In this way, understanding why problems and consequences escalate more intensively for some entrepreneurs can be improved. Moreover, this can help to identify root consequences more precisely and formulate suggestions for entrepreneurs regarding that which consequence should they cope first. Second, this categorization system can help analyse more precisely potential connections between the consequences of failure and entrepreneurs' coping, learning, and re-entry decisions.

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UNDERSTANDING THE EARLY CAREER SELF-INITIATED EXPATRIATION – A REVIEW AND DIRECTIONS FOR FUTURE RESEARCH

PÁLYAKEZDŐ EXPATRIÓTÁK, KÜLÖNÖS TEKINTETTEL A NEM VÁLLALATI KIKÜLDÖTTEKRE (SELF-INITIATED EXPATRIATES; SIE) – SZAKIRODALMI ÁTTEKINTÉS ÉS JÖVŐBELI IRÁNYOK

While the literature on self-initiated expatriation (SIE) is well-established in management, no systematic investigation has yet been conducted to explore the specificities of early career expatriation. This review article aims to identify and analyse publications that uniquely focus on self-initiated expatriates, who decide to start their career abroad, either with little or no prior work experience. After identifying relevant publications in this specific research field, the authors discuss the personal career motivations and behaviours of early career self-initiated expatriates and the relevance of this phenomenon for the global workforce. The contributions of this article are twofold. First, they integrate the relevant research findings from recent decades on early career self-initiated expatriates. Second, they provide information about managing early career SIEs and propose a future research agenda to address the knowledge gap identified in this review and apply the findings to practice.

Keywords: literature review, early career self-initiated expatriate, future agenda, multiparadigm literature review, functionalist approach, interpretivist approach

Az expatrióta irodalmon belül a nem vállalati kiküldötteknek (önerejéből külföldön elhelyezkedő; self-initiated expatriates; SIE) bejáratott irodalma van a menedzsmentben, azonban a pályakezdő expatrióták sajátosságaival eddig még senki sem foglalkozott. Jelen összefoglaló cikk célja, hogy azonosítsa és elemezze azokat a publikációkat, amelyek kifejezetten erre a csoportra fókuszálnak, azaz, akik úgy döntenek, hogy külföldön kezdik meg a pályafutásukat, beleértve a munkatapasztalat nélküli vagy csekély szakmai tapasztalattal rendelkezőket. Külön hangsúlyt helyezünk a karriermotivációjuk, viselkedésük, és globális karrierhez való hozzájárulásuk megértésére. A cikk két tekintetben járul hozzá a szakirodalomhoz, egyrészt összefoglalja a témában az elmúlt évtizedekben készített kutatások lényeges következtetéseit, másrészt információval szolgál a pályakezdő önerejéből külföldön elhelyezkedő munkavállalók menedzseléséről. Ezen felül jövőbeli kutatási irányokat is kínál, rámutatva az észlelt hiányosságokra és elősegítve a levont következtetések gyakorlati alkalmazását.

Kulcsszavak: szakirodalmi áttekintés, pályakezdő expatrióta, jövőbeli kutatási irányok, multiparadigmikus szakirodalmi áttekintés, funkcionista megközelítés, konstruktivista megközelítés

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In the 21st century, with the development of a globalized economy, the knowledge economy, technological innovation, migration flows, specialisation, work values, and labour markets have all changed dramatically. This has profoundly affected the individual career development of employees and the organisational career management of companies. The growing number of professionals who seek global careers beyond their home country (Hajo et al., 2019) makes it necessary to investigate expatriation, with a specific focus on self-initiated expatriation. It is assumed that an increasing number of young graduates within self-initiated expatriates are deciding to start their careers in new countries. This article focuses on their specific characteristics.

There are two distinct sets of academic research: one focusing on self-initiated expatriates independently of their career stage or age, and the other focusing on early career professionals. SIE literature focuses on a range of topics, including motivation (Thorn, 2009), adjustment (Begley et al., 2008; Peltokorpi & Jintae, 2009; Meurer et al., 2019), career capital (Jokinen et al., 2008; Al Ariss & Jawad, 2011), career development (Cerdin & Le Pargneux, 2010; Brewster et al., 2019), and repatriation (Chiang et al., 2017; David et al., 2020), while the literature on early career professionals deals with topics such as seeking challenging opportunities (Dries et al., 2008; Thorn, 2009; Baluku et al., 2018), career development (Pereira et al., 2016) cultural adaptation (Wechtler, 2018), repatriation (Goštautaitė et al., 2020), career advancement (McNulty et al., 2016), and career challenges (Waxin & Brewster, 2020). While there are overlaps between the two distinct sets of academic research, early career self-initiated expatriates have not received the necessary attention. This article aims to fill this gap by investigating the specific characteristics of early career SIEs, their motivation to start their careers abroad, and their impact on global HRM.

As a theoretical introduction we review the terminology of self-initiated expatriation in general, and Doherty's (2013) three level of analysis in particular, to clarify the definitions and concepts used. Next, we explain the methodology of literature search and selection: we adopt a multiparadigm approach, which includes a systematic review and co-occurrence analysis of a large database with functionalist principles as the first wave, and an in-depth investigation of a smaller, focused set of articles applying qualitative text analysis following interpretivist epistemology as the second wave. Our findings highlight that early career self-initiated expatriates are not a sporadic phenomenon in employment, and their presence has an impact on different countries at the macro level. Organizations need to develop strategies to effectively harvest the benefits of unique skills and knowledge of young professionals who seek employment outside of their home countries. Finally, personal motivation and cultural adaptation require further attention at the individual level.

Theoretical Introduction and Framework

Self-initiated Expatriation Terminology

Expatriation is a term introduced for experts who are sent for international assignments by their employers, mainly

for a limited time period, to distinguish company-assigned and self-initiated expatriates (Tharenou, 2015) described self-initiated expatriates, as expatriation is their own choice, they seek employment and their move is self-funded. Consequently, SIEs are characterised by self-initiated international relocation, regular employment, intentions of a temporary stay, and skilled qualifications (Cerdin & Selmer, 2014). While “self-initiated expatriation” is a well-defined term in literature, there is less clarity around the term “early career SIE”. The lack of a uniform definition makes it difficult to identify early career SIEs. However, we can ensure that early career self-initiated expatriation is a starting point of their career (newcomer), not merely their first job as an expatriate. Therefore, this literature review addresses various young individuals who choose to undertake an international career path and analyses early career self-initiated expatriates' personal career motivation, behaviour, and relevance to the global workforce.

SIEs are different from corporate-assigned expatriates who have more autonomy to choose their career location. SIEs leverage their stronger cross-cultural adaptability to build their career capital during the expatriate experience and thus achieve career success (Kanstrén & Suutari, 2021; Paik et al., 2017). As SIEs are not supported by organizations, their personal characteristics play a critical role in their organizational success and eventually in their careers (Lauring & Selmer, 2018). SIEs cross the boundaries of different employers (enterprises) globally in pursuit of maximising their own interests and career development (Bernardo & Salanga, 2019; Utam et al., 2020).

Organisations offer career management plans to assist individuals in developing their careers, based on the specific skills the organisation needs to cultivate. These plans often involve career ladders. The concepts of boundless careers and expatriate careers emerged simultaneously and share similar connotations. According to Redondo et al. (2021), in the volatile career model employees manage their own careers and make decisions based on their career aspirations. The main criterion for judging career success is psychological success, that is, subjective success. In this career model, gaining a better understanding of organisational attitudes in the ever-changing career landscape can enhance the importance of employer perceptions of talented employees and avoid additional risks to the business in terms of employee commitment and intention to leave. Therefore, the development of the volatile career model is not constrained by a specific career path or organisation but is rather driven by personal aspirations, much like the self-initiated expatriate career trajectories observed in early career stages.

Three levels of self-initiated expatriate research

Doherty (2013) proposes the organising framework for SIEs that includes the following levels: micro level (individual and psychological experiences), meso level (organisational benefits and potential losses) and macro level (socio-economic processes).

At the macro level of analysis, the most important discussion of SIEs pertains to their contribution to the host country, the potential loss of talents in their home country, and the specific consideration of repatriation. More specifically, it examines whether SIEs' experience, skills and international network gained during their foreign exposure will be useful for the home country (Cohen, 2009; Cohen & Krantz, 2015). At this level, global resources and flow of talent are under scrutiny (Doherty, 2013). Migration and self-initiated expatriation are difficult to distinguish at this level, and their consequences are often inseparable. Furthermore, the study of gender self-initiated expatriation has revealed an interesting difference between company-assigned and self-initiated expatriation that has consequences at the macro level. Women are less likely to be sent abroad by their employers (Tung, 2008), but they might choose to pursue self-initiated expatriation when faced with a glass ceiling (Wechtler, 2018). Overall, the SIE community is predominantly male. However, female self-initiated expatriates make up a significant part of the community.

At the meso level of analysis, discussions about SIEs mainly focus on the fact that company-assigned expatriates aim to pursue organizational goals during their international assignment, while SIEs are individualistic and their personal motives might or might not contribute to the organizations. They are nonconformist, self-reliant, self-directed, and proactive (Mayrhofer et al., 2008). At the same time, the professional value of SIEs has been acknowledged (Howe-Walsh & Schyns, 2010), and the challenges of integration have been investigated as a decisive criterion for the potential of SIEs' contribution to their organization (Abbas et al., 2021). When SIEs perceive discrimination or prejudicial behaviour among local employees, this has a negative impact on their work attitude, while they can bring their unique expertise and skills to their host organization when they establish positive interaction with co-workers. Gender differences have also been identified at the meso level (Bastida, 2018). Isakovic and Whitman (2019) examine the direct effects of organisational support and adjustment on retention willingness, work engagement, and the mediating impact of adjustment on self-initiated expatriation among low-skilled women in the United Arab Emirates. The results show that perceived organisational support (POS) and job adjustment has a significant, positive, and direct impact on retention and willingness to participate. Additionally, the study found that the job adjustment of SIEs moderated the relationship between POS and work engagement and POS and retention willingness, to a certain extent. Siyal et al. (2021) examine the impact of inclusive leadership on fostering innovative work behaviours and creativity among employees. Through a comprehensive analysis of diversity, they reveal that inclusive leadership positively impacts innovative work behaviour and creativity.

Micro level discussion is concerned with individual characteristics and motives which foster self-initiated expatriation, and push and pull factors have been identified (Doherty, 2013). Al Ariss and Jawad (2011) elaborate on

the complex system of decision-making factors that lead to international mobility, as it is influenced by professional status, education, economic resources and social networks. Jannesari and Sullivan (2019) discuss the career success of SIEs from psychological perspectives and conclude that occupational adaptability is positively correlated with performance and adaptability, whereas psychological availability mediates the relationship between occupational fitness and performance and adaptation. However, supportive organisational supervision does not moderate the relationship between occupational fitness and performance or adjustment. Cultural adaptability is also considered a key factor, and there are also returnees with expatriate experience who feel that they can maximize their career potential only at home. Ellis et al. (2020) emphasize the importance of a strong alignment between return expectations and the actual repatriation experience, recognising the importance of individual institutions and the impact of the repatriation. Remennick (2022) analyses the experience of multiple returnees who return home after working in other countries around the world. Most returnees believe that only at home can they maximise their career potential. They show a strong national identity, culture, and filial piety.

Methodology

In terms of analysis methods, to date, the literature has been mainly data-driven functionalist in approach (Cile-siz & Greckhamer, 2020; Roulston & Bhattacharya, 2018; Symon et al., 2018). This has resulted in a lack of in-depth analysis from an interpretivist perspective, particularly in the context-rich analysis of unexplored phenomena. Qualitative research is receiving increasing attention for its effect on key empirical, conceptual, and theoretical contributions (Ghuri & Gronhaug, 2020; Primecz, 2020; O'Kane et al., 2021; Richardson, 2021). Moreover, paradigm reflexivity and openness towards new paradigmatic and methodological approaches are required to explore novel fields of inquiry. For instance, Wechtler (2018) introduced new insights into SIE research by drawing on qualitative research from blogs and incorporating feminist and existentialist reflections.

Acknowledging the value of both functionalist and interpretivist approaches, some authors select a multiparadigm strategy (Primecz, 2008; Primecz et al., 2023). Relying on functionalist principles, the first author began with a systematic search strategy to identify key articles from multiple disciplines. Three journal databases, namely Web of Science, Google Scholar and Proquest Thesis, were searched for articles published between 2003 and 2022 using a set of keywords, including immigration, early career expatriates, entry-level position, international graduate student, student affairs professionals, motivation, challenges, resilience, repatriation, culture adaptation. The literature search was completed in two waves. In the first wave, 1703 academic publications were identified by keyword search, including journal articles, theses, books, book chapters and conference papers.

out the emphasis on early career. In all cases where it was not obvious from the title and abstract whether an article would be relevant, we included them for full-text reading. The first author conducted the reading and coding of full-text articles with the help of NVivo qualitative software. This led to eliminating six further articles, which proved to be irrelevant upon thorough investigation of their content. The 16 selected articles were coded, while seven of them were eventually eliminated after they were fully coded due to their content; and to ensure a comprehensive coverage of published articles on the chosen topic, further searches for articles were conducted. The first author used the snowballing strategy to follow references and citations to these publications during the full-text analysis until no new relevant publications were found. The eligible publications were evaluated and subsequently analysed based on particular research that addressed the identified issues. The study involved a thorough reading of full texts. Ultimately, 18 articles were identified as key articles on early career SIEs and were coded with the help of NVivo software. As a result of the coding process and the in-depth analysis of the interplay among different levels, three main themes emerged, which the second author validated.

Authors used various coding processes to organise the analysis at the contextual, organisational, and individual levels in terms of coding schemes. The early career SIE was then explored from a range of perspectives, as shown in Figure 2, which synthesises the following theoretical models from the research evaluated into a complete field map. Finally, a research gap in literature was identified.

Findings

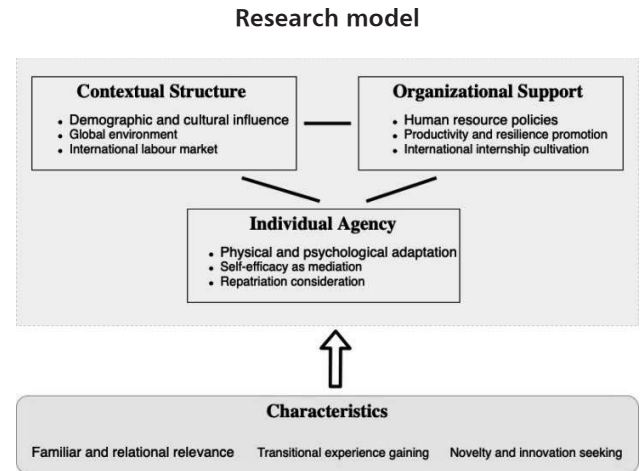
The rapid development of globalisation has encouraged international companies to take an interest in the growth of job mobility and employee relocation to meet global labour demand. These companies rely heavily on expatriate employees to manage their operations abroad and in other cities (Ruel & Jaegler, 2021; Shortland & Perkins, 2022). Many globally relevant work experiences, such as corporate and self-initiated expatriates, as well as novel forms of corporate global workforces have been analysed in terms of personal choices, challenges, and careers associated with development (Shaffer et al., 2012). The structure and types of expatriate employees are complex and diverse, including factors such as gender differences, differences in early occupation and professional SIEs, differences in the country or length of time of expatriates, and differences in the field of expatriates. Many scholars have studied the structure and occupational characteristics of early career SIE. Based on the literature analysis and interpretative coding, the research model is demonstrated in Figure 2.

Early career self-initiated expatriates' characteristics

Young foreign students often have larger social circles and are generally given greater opportunity for self-disclosure. Additionally, they are also perceived as temporary residents in the host-country. Understanding the

characteristics of early career SIEs is beneficial for global HRM, and their characteristics can be summarised and analysed based on familial and relational relevance, gaining transitional experiences and novelty and innovation-seeking.

Figure 2



Source: own compilation

The relevance of familial and relational links in expatriation is evident early in one's career and is moderated by personal circumstances after graduation (Tharenou, 2003). Young students are unlikely to be married; however, if they have strong attachment to parents, friends and community, they may be less receptive to working abroad compared to those who have weaker attachments. The early career SIEs regard their mobility as gaining transitional experiences. The early career paths of young self-initiated employees are potentially impeded by linguistic and cultural skill shortages, as well as financial constraints (Kristensen, 2004).

On the one hand, McCoy and Masuch (2007) describe an ethnographic investigation of women's experiences in the early years of their work in non-regulated occupations, utilising their transferrable abilities throughout this transitional time. On the other hand, Doherty (2013) studies young westerners in good positions in developed countries, with defined professional and growth goals, who have opted to become mobile. Therefore, young SIEs, who are more self-directed learners, rely heavily on technology to achieve collective consensus and acceptance from their social groups, since they have a strong sense of belonging to a peer group, which is echoed by Shaw and Fairhurst (2008).

According to Dries et al. (2008), the main motivation for early career SIEs to move abroad is seeking challenging opportunities. Early career SIEs want to pursue novelty and innovation, they have stronger mobility ambitions and may gain international experience on the entry-level professional road (Fourage & Ester, 2007). Although only 12.6% of the sample population aged 18-24 in Europe considered moving to another country in the next five years, early career SIEs consider that longer international work experience can equip them with a

long-term perspective. Thorn (2009) uses a quantitative methodology to conclude that chances for travel and adventure, as well as job advancement, are important socio-cultural and economic motives for young self-initiated expatriates.

Women in early stages of their careers are motivated by challenge and ambition because they perceive their SIE experience as an opportunity “brimming with unlimited possibilities” (Sullivan & Mainiero, 2007). Inkson and Myers (2003) conducted an exploratory qualitative study of the young self-initiated expatriates from New Zealand and found that the motivations are a search for a different way of life, excitement and partner influences, rather than work or career-related factors. The findings also showed that while the SIE experience brings benefits, the process is unpredictable and complex; therefore,

it requires greater self-direction, internationalisation and flexibility. Tharenou (2003) conducted a study on 213 young entry-level workers (with an average age of 23 years) using social cognitive career theory and taking age, gender, and marital status into consideration. The study found that the early career SIE had a strong sense of personal agency and less influence from family relationships, with worldwide options, and an increased openness to take up foreign professions.

Three levels of analysing early career SIEs

This literature review provides an overview of previous research on early career SIEs, examining the topic from three levels of analysis: structural, organisational and the level of individual agency. The summary is presented above in Table 1.

Table 1

The summary of articles on the early career self-initiated expatriate

	Perspective	Author	Year	Principle findings	Journal
Characteristics	Familial and relational relevance	Tharenou	2003	Strong sense of personal agency and less influence from family relationships	Journal of Occupational and Organizational Psychology
	Transitional experience gaining	McCoy & Masuch	2007	Utilising transferrable abilities	Comparative Migration Studies
	Novelty and innovation seeking	Inkson & Myers	2003	Different way of life, excitement and partner influences	Career Development International
		Thorn	2009	Cultural exposure, travel, and a desire for adventure	Career Development International
Three levels	Contextual structure	Doherty et al.	2010	Geographical factors and site preference	Career Development International
		Goštautaitė et al.	2020	Adversely linked with home country career and community embeddedness; feedback decreases SIE intention	Career Development International
		Jonbekova et al.	2021	Socioeconomic and cultural factors, intergenerational clashes, and scholarship program regulations	Higher Education
	Organisational support	Joardar	2011	Task-based and relationship-based group acceptance activity	International Journal of Cross Cultural Management
		Makkonen	2017	The employability of newcomer self-initiated expatriates in China: employers' perspective	Asia Pacific Journal Human Resource
		Felker	2011	Individuals work in positions below levels of credential education and capability; information gaps and insufficient search preparation; lack of organisational support	International Journal of Training and Development
		Oh	2016	Adjustment to working in organizations, resulting in socialization and mediating effects on relationships	Asia Pacific Education Review
	Individual agency	Weedon	2012	Professional expertise and academy as an insular host culture	International Review for the Sociology of Sport
		Pereira et al.	2016	U-curve model does not operate in the early career SIEs; SIEs regard change as a chance to expand their knowledge and abilities	Journal of International Management
		Egilsson & Dolles	2017	Problem-focused coping strategies have been more effective than emotion-focused strategies	Journal of Global Mobility
		Baluku et al.	2018	Importance of flexibility and personal initiative	Journal of Global Mobility
		Seok-Young & Jang	2021	Embracing cultural diversity and entrepreneurship; involvement in training programs, and a supportive work environment	Career Development International
		Milne	2001	SIEs possess more skills upon repatriation	New Zealand Medical Journal
Wechtler		2018	Escape, confrontation with reality, identity reconstruction, purpose of expatriation	Career Development International	

Source: own compilation

Contextual structure

The contextual and structural levels that affect SIE's labour integration mainly represent the employment structure of the country. The factors at this level are complex, including a series of transnational conventions, international regulations, national legislation, and in some cases multilateral auxiliary clauses. This article reviews the relevant literature on SIE from a structural level.

Firstly, demographic and cultural factors play an important role in early career SIEs' career trajectories. According to Doherty et al. (2010), geographical factors are significant for SIE since they take into account time, distance, and the possibility of regular return to the home country. They suggest that data from both the country of origin and the host country can help determine the size and type of national disparities, including the influence of language ability and site preference. However, it would be informative to examine security concerns operating as a deterrent to returning to the home country. Goštautaitė et al. (2020) find that self-initiated expatriation intention is adversely linked with career and community embeddedness in the home country and that developmental feedback decreases SIE intention.

Secondly, the global environment and international labour market are the structure of young SIEs' mobility. In terms of contextual factors in the labour market, there are information asymmetries between graduates and employers. William et al. (2018) suggest graduates feel more employable than they are in the market due to rivalry for graduate positions and limited resources. In a qualitative research of 45 Kazakh expatriates Jonbekova et al. (2021) found that international scholarship alumni with positional advantages face difficulties in their transition to the job market due to socioeconomic and cultural factors, intergenerational clashes, and scholarship program regulations.

Organisational support

Organisations play a critical role in assisting self-initiated expatriates' transition to a new culture, particularly through interventions during the adjustment periods. Therefore, organisational views of graduates abroad are essential (Shen & Herr, 2004; Hippler et al., 2015). At the organisational level, it mainly means that multinational companies and human resources managers should provide expatriate training and support for early-career SIE candidates. They can also send local employees to help early-career SIEs communicate in the host country. There are many relevant types of research on early SIE at the organisational level. Makkonen (2017) investigates western newcomer self-initiated expatriates (NC-SIEs) with no prior work experience in cross-cultural career contexts from the perspective of employers, and the findings show that both organisational and contextual drivers define the value of individual ability and skill.

It is necessary to formulate an organisational plan and support different types of talent with specific policies by using SIEs as one of the ways talent development motivates expatriates in the global economic trend. Joardar (2011) applied expectancy violation theory to demonstrate that

a foreign newcomer's task-based and relationship-based group acceptance changes when the newcomer's performance and cross-cultural adaptability do not confirm the group's expectations. This results in the workgroup functioning properly. Oh (2016) proposes personal-organizational (P-O) fit theory to demonstrate the importance of international graduates' formal learning, intended informal learning, and unintended informal learning experiences in influencing self-initiated newcomers' adjustment to working in organizations, resulting in socialization outcomes and mediating effects on relationships.

Felker (2011) conducted in-depth interviews with 22 young, well-educated Eastern Europeans who relocated to Western Europe in quest of professional growth chances. The findings reveal that individuals work in positions below their levels of credential education and capability due to information gaps and insufficient searching preparation. Meanwhile, organizations do not fully utilize the available human capital offered by Eastern Europeans, implying untapped opportunities to gain a competitive advantage through human capital. Recognising that various variables impact foreign students' future aspirations and that these plans differ from person to person, it becomes evident that career service support should be offered to the international graduate student population. Additionally, establishing international student communities and coordination between career counselling and placement centres are recommended.

Individual agency

Baluku et al. (2018) investigate early career self-initiated expatriates' diverse career paths, emphasizing the role of flexibility and personal initiative. When it comes to job choices, the results show that early career SIEs should focus on improving their capacity to be flexible and career orientation. Wechtler (2018) adopts a new approach to examining the motivations of single childless female SIEs deciding to work abroad, finding that there are four main reasons for opting for self-initiated expatriate career, namely, escape, confrontation with reality, identity reconstruction, and purpose of expatriation.

One of the most important factors affecting early career SIEs task completion is individual cognition. The early career stage of SIEs is the main factor that affects their success rate in achieving their missions and reduces their turnover intention. International graduate students bear the physical and psychological costs to follow their ambitions through international education, with the ultimate objective of achieving their own career goals (Leong & Chou, 1996; Shen & Herr, 2004).

Physically, graduates overseas need to navigate the system, understand the language, and get access to information in order to succeed in the academic and professional communities (Shen & Herr, 2004). Because of the short term of overseas assignments, Pereira et al. (2016) demonstrate that the U-curve model does not operate in the early career SIEs' research setting; consequently, evaluating the duration of time for expatriate adjustment is critical. They examined how young, highly qualified and

mobile self-initiated expatriates tend to prefer relying on their own resources and information to find employment opportunities in the job market.

Seok-Young and Jang (2021) employ a mixed-method approach to explore how young Korean SIEs adapt to work. Personal attributes, such as willingness to accept cultural diversity and entrepreneurship, participation in training programs, and a supportive work environment, are positively related to social and cultural adaptation in the process of job transformation. Therefore, organisations should create an environment conducive to learning, encourage learning in the workplace, and recruit employees who possess characteristics required for an assignment. Therefore, when selecting SIEs, organisations should create supportive learning environments to facilitate workplace learning and seek out expatriates with suitable characteristics.

The psychological factor for early career SIEs is that their success in performing expatriate tasks is mainly influenced by their expatriate cultural adaptability, which also mitigates their willingness to leave. Egilsson and Dolles (2017) explore the transitional experiences of talented young Icelandic footballers, and their result show that problem-focused coping strategies have been more effective than emotion-focused strategies. In contrast, Weedon (2012) investigates the transitional acculturation experiences of migrant young footballers. The findings suggest that professional expertise and academy as an insular host culture assist young SIEs in coping with cultural challenges when they experience emotion-related culture shock in the host country.

Cross-cultural adaptation (CCA) is an essential factor determining whether early career self-initiated employees can successfully complete tasks. The research basis of expatriate acculturation comes from the fields of sociology and anthropology and mainly emphasises the process of behavioural and psychological adaptation after individuals enter a heterogeneous culture, taking into consideration the time frame and task at hand (Luef, 2020).

Self-efficacy takes a mediated role and is typically associated with a protean attitude and employed to accomplish desired professional objectives (King, 2004). Bernardo et al. (2019) investigate 669 young people and their career attitudes in the Philippines using the four-factor structure of the protean and boundaryless career attitudes scale. They aim to examine the component structure, association with related constructs, and psychometric qualities of the protean and boundaryless career scales in the early career SIE. The study assessed career adaptability, career optimism, perceived professional expertise, and cultural intelligence, and found internal consistency across the four component scales.

Repatriation is also an essential topic for early career SIEs. Milne (2001) claims that better qualified and fitter young SIEs aim to possess more skills when they choose to return. When compared to their compatriots who choose to remain abroad, returning early-career researchers display higher levels of parochialism, manifested by stronger community ties and patriotic loyalty, as well as

geographically constrained employment search (Israel & Cohen, 2022).

Discussion

The main structural factor affecting the work performance and success rate of early career SIEs is their cultural adaptability to different national structures. Apart from that, the organisational level plays a key role in assisting early career SIEs with their transition and cultural adaptation, especially through interventions provided by their organisations in the adjustment period (Hippler et al., 2014). This demonstrates the role of psychological availability as a means of psychological engagement for SIEs and their host-country colleagues during the process of adjusting to work and social interactions. This view is consistent with the conclusions of Jannesari et al. (2017). Lastly, an individual's ability to adapt to the expatriate culture is the main factor that affects the success rate of their mission, which is also the main reason for reducing expatriates' turnover intention.

At the macro level, it is necessary for countries to formulate relevant public support measures for early career SIEs. By holding regular social etiquette classes, relevant institutions in different countries actively invite host country employees, local teachers or government departments to make suggestions on how to strengthen the interaction between self-initiated expatriates and locals, and take measures according to the actual situation. It is necessary to train communication etiquette and skills for early professional SIEs. People should not regard different cultures, religions and values as a burden, but rather embrace and adapt to the diversity of the world. This approach can help us avoid misunderstandings caused by improper communication with the host country's personnel. Finally, it is important to educate early career professional SIEs on how to respect the host country's personnel and culture, and approach economic interests with a mindset of achieving a win-win situation.

Additionally, organisations should pay attention to employees' cross-cultural adaptation when improving their job satisfaction and early career SIEs' retention intention. Good cross-cultural adaptability can effectively improve expatriates' job satisfaction and retention intention. To ensure general adaptation, business organisations can provide employees with life guides or documentaries about the host country, so as to help expatriate employees understand the host country's weather, climate, customs, legal system, and the like (Sahoo et al., 2022). Meanwhile, before SIEs go abroad, colleagues who have previously worked on foreign projects should provide a detailed introduction to the actual situation of foreign life, highlight potential difficulties and problems, and express their own experiences to enhance the vitality and credibility of training early professional SIEs.

Finally, at the micro level, it is necessary to fully understand the work habits and objectives in the host country and not solely focus on maximising economic benefits as the only standard of value for work. In case of conflicts,

people should not blindly work or complain, but rather explain the reasons for working with a professional attitude and technology. It is also useful to share some of the host country personnel work concepts with SIE employees through training.

Future Research Directions

Early career SIEs have been researched by a number of authors. However, there are some points which the previous literature raises that are worth reflecting on, as they provide directions for subsequent research in related fields. Methodologically, more comprehensive and diversified research methods should be adopted in the future. Therefore, forthcoming research should employ diverse research methods to reveal the complex phenomena. The cross-level research method can be used to combine the influences at the individual level and the organisational level for analysis. From the content perspective, four directions are described in the following section.

Firstly, to summarise the above structural, organisational and individual level and explore the post-COVID-19 epidemic influences on early career SIEs' attitudes and behaviours, it is crucial to manage and develop the subsequent careers of early career SIEs (Abdalla & Al-Zufairi, 2020).

Secondly, individuals who lived in a foreign country as teenagers regard themselves as international, have higher openness to different cultures, and have greater international job preferences, travel and future orientation, and have lower settling-down inclinations (Selmer & Lam, 2003). Since there is a lack of literature that compares early career SIEs to individuals born in the host country, it is advisable to analyse how adult third culture kids (ATCKs) view their future ability to complete international tasks. ATCKs see themselves as the truly competent source of expatriate talent based on their international experiences as children and their ability to adapt to the social culture in a chameleon-like fashion (Westropp et al., 2016). Therefore, the difference between early career SIEs with local and international credentials is also a relevant issue which needs further exploration.

Thirdly, this finding does not apply to older employees, indicating the need for future research which would address differences between younger and older employees. It may be particularly relevant for the organisations to focus on the initial development of receptivity.

All studies have their limitations, and this work is not an exception, especially in field of the rapidly changing world of international employment. While it may have seemed during the COVID-19 pandemic that the internationalization of careers will slow down or be replaced by extended distance work, the direction of such development is not unequivocal. Therefore, we have to treat past and present research results with reservation. It is possible that we experience major changes in globalization and internationalization of individual careers in the near future and this is why further studies including empirical and literature reviews will be necessary.

Conclusion

Through review and analysis, this article presents the existing outputs and proposes future research directions from a multi-disciplinary perspective, hoping to help promote the success rate of SIEs' assignment in early career in enterprise management. There is an urgent need to fill the current knowledge gap in the field of professional assignment and management. This article not only summarises and analyses relevant literature on early career SIEs at the structural, organisational and individual level, but also analyses the follow-up prospect of early career SIEs at the macro, intermediate and micro level. It is believed that the cultural adaptability of early career SIEs can generate more enthusiasm and sense of belonging to the enterprise organisation. Only in this way can the relevance and applicability of studying the motivation and challenges of expatriates be tested in different countries and environments.

With the continuous improvement and implementation of economic development strategies, management scholars and practitioners need to pay attention to their own knowledge reserves and professional abilities, and recognize the necessity of effective research and practice in the field of career management at macro, intermediate and micro levels. However, as society continues to progress, the trend of economic globalization will continue to deepen, leading to the further refinement of enterprise management for SIEs. The hope is, therefore, that this review can provide direction for comprehensive, detailed, and diverse expansion in the field of internationally self-initiated expatriate management.

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DISRUPTIVE SOLUTIONS FOR FINTECHS AND THEIR RISKS – HUNGARIAN CASE STUDIES

FINTECH CÉGEK DISZRUPTÍV MEGOLDÁSAI ÉS AZOK KOCKÁZATAI – MAGYARORSZÁGI ESETTANULMÁNYOK

In recent years disruptive technologies have transformed the traditional financial sector through their spillover effects into financial services. The aim of this research is to explore what disruptive solutions and business models are applied by the companies studied and what new potential risks they pose. The authors applied a qualitative research methodology to investigate four cases of Hungarian FinTech companies. They selected companies working in the most prominent FinTech areas in Hungary: an electronic payment service provider, an open banking and data aggregation company, an online payments risk analyst and a comparison platform company. This research findings confirm that the widespread disruptive technologies and business models mentioned in the literature are implemented in practice, which can also pose several novel risks. The most important risks are those related to the possible leakage of sensitive financial and customer data and the possible loss of control due to the use of AI.

Keywords: FinTech, digital finance, cyber risk, cyber security, case study

Az elmúlt években a diszruptív technológiák a pénzügyi szolgáltatásokra gyakorolt tovaryűrűző hatások révén átalakították a hagyományos pénzügyi ágazatot. A kutatás célja annak feltárása, hogy a vizsgált vállalatok milyen diszruptív megoldásokat és üzleti modelleket alkalmaznak, és ezek milyen új potenciális kockázatokat jelentenek. A szerzők kvalitatív kutatási módszertant alkalmaztak négy magyar FinTech vállalat esetét vizsgálva. A legjelentősebb magyarországi FinTech területeken működő vállalatokat választották ki: egy elektronikus fizetési szolgáltatót, egy nyílt banki és adataggregációs céget, egy online fizetési kockázatelemzőt és egy összehasonlító platformot üzemeltető céget. Kutatási eredményeik megerősítik, hogy a szakirodalomban említett, széles körben elterjedt diszruptív technológiák és üzleti modellek a vizsgált vállalatok gyakorlatában is megvalósulnak, amelyek számos újszerű kockázatot is hordozhatnak. A legfontosabb kockázatok az érzékeny pénzügyi és ügyféladatokat esetleges kiszivárgásával, valamint a mesterséges intelligencia alkalmazásából adódó kontrollvesztéssel kapcsolatosak.

Kulcsszavak: FinTech, digitális pénzügy, kiberkockázat, kiberbiztonság, esettanulmány

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In recent years, the use of digital applications, speed and electronic administration, and the demand for better customer experience have also become more common in financial services. Even before the pandemic outbreak, the sector was shaped by digital trends, with the demand for alternative payment models. Payment card use was the first alternative, but today there are many online payment options available for both traders and buyers. The pandemic has increased the digital presence of businesses and consumers, providing a new attack platform for hackers; thus, there is a growing need to protect customer data.

The actuality of the research topic is created by the fact that digitalisation has revolutionised the field of finance, and the impact of disruptive technologies in financial services has reshaped the traditional financial sector. Many innovations can be harnessed to deliver digital financial services. Due to the introduction of digital financial services (e.g., electronic payment), cyber risk factors have appeared in the data flow; thus, users' data must be handled with great care to prevent misuse.

We are witnessing a global revolution, as innovative solutions have become indispensable in many financial services worldwide (Droppa & Becsky-Nagy 2019). The pandemic has brought digital payments to layers of society that would not have been reached for years (Farkas et al., 2022).

Using case studies of four FinTech companies in Hungary, the research explores the disruptive technology used by the companies studied and assesses what we think the risks could be. The area of payment services is only one part of digital financial services, and our research will also focus on financial infrastructure providers and the risks arising from networking.

In our literature review, we briefly summarize the general changes in the digital financial sector, and also mention some disruptive technologies and business models used in FinTech. We describe the new potential risks posed by digital financial services and some security measures that can be used to counter financial cyber risks.

In our research, we have conducted four case studies dealing with four FinTech companies operating mainly in Hungary. Due to the small number of companies included in the case study, the research results are rather qualitative and cannot be used to draw generalised conclusions on the subject. The case studies will illustrate and evaluate the extent to which the disruptive technologies and business models mentioned in the literature are implemented in the practice of the selected companies. We have also highlighted the possible risks arising from the disruptive technologies and business models applied by the FinTechs studied when providing their financial services.

Literature review

A general overview of changes in the financial sector in the light of digitalisation

Digitalisation has changed consumer habits, with the need for a high level of customer experience coming to the fore, and most businesses have turned to technology

to meet this need. Several new payment service providers have recently entered the market, offering a higher quality customer experience and exerting a massive influence on the relationship between incumbents (traditional financial players such as banks) and their customers – taking over some of the functions of traditional financial institutions (e.g. payment services) (EBA, 2018). Increased activity can be observed among the players challenging banks, not only in the B2C (business-to-customer) but also in the B2B (business-to-business) sector. B2B-focused financial service providers are increasingly seeking to support end-to-end transactions (KPMG, 2021).

The provision of financial services is heavily influenced by platformisation, including open banking efforts through the PSD2 (Revised Payment Services Directive) regulation and the expansion of so-called BigTech companies. Of the very large platform operators, the BigTech companies have the most significant market power and, in addition to their wide range of IT services, they have recently started to provide financial services.

PSD2, which was introduced in 2019, is an EU directive that paved the way for open banking. PSD2 obliges banks to provide access to their customers' accounts to external Third-Party Providers (TPPs), subject to their consent, to provide financial and information services. The primary objective of the directive was to strengthen competition in the banking market by involving digital financial service providers (e.g., FinTechs, BigTechs). The operating conditions for incumbents and digital financial service providers have been characterised by asymmetry from the outset. Traditional banks are subject to strict rules, while FinTech firms have mainly provided payment services using disruptive technologies at very low costs. Under PSD2's open banking rules, users decide with whom they want to share their financial data. Banks are responsible for ensuring that this sensitive financial data is transferred securely to financial service providers. The most appropriate tool for this is the open access Application Programming Interface (API) (Müller & Kerényi, 2021). Under the PSD2 rules, banks must make their API access available free of charge to the Account Information Service Provider (AISP) and Payment Initiation Service Provider (PISP) listed in the registers of financial authorities. These TPPs can connect to the bank's infrastructure via the bank's APIs. From here, they can retrieve transaction data and initiate transfers with the prior permission of customers (Németh, 2019a, 2019b).

Disruptive technologies and novel business models in the FinTech sector

Digital financial service providers use disruptive technologies (e.g., artificial intelligence (AI) and a subset of AI, machine learning (ML), or APIs to offer a higher-level customer experience. Understanding some of these innovations would require a high level of IT knowledge, so the IT side of these innovations is only touched upon in this article.

Using distributed ledger technology (DLT) for cross-border payments reduces process complexity and

operational costs, speeds up reconciliation processes and enhances transaction transparency. It also increases the availability of KYC (Know Your Customer/Client) type data, making customer identification processes and thus risk management more efficient. However, if DLT-based payment systems fail to ‘interoperate’ with existing processes and infrastructures, this could lead to overall financial inefficiency (FSB, 2019).

BigTech companies have a massive number of users and, therefore, a vast amount of data, which they use to develop their platform strategy, taking over an increasing share of the financial intermediary system. They also have advantages in Big Data analytics tools (e.g., AI algorithms), which help them to better understand and influence customer needs (Müller & Kerényi, 2021). Increasingly sophisticated smart devices and their interconnection generate a staggeringly large amount of data. However, this data set has enormous value if processed with the right tools (e.g., AI).

Marketplace-type digital platforms where consumers can access a range of financial and non-financial products and services in one place are also becoming more common. The FinTech-enabled marketplace is based on a traditional marketplace business model with a FinTech solution (e.g., electronic payment, insurance, etc.) built directly into its platform. With this solution, a financial intermediary (e.g., an external payment service provider) – previously wedged between the buyer and the seller – can be removed from the process, strengthening the trust and business relationship between the trader and the customer (Flint, 2021). With the FinTech Marketplace, you can broaden your target market, and reduce customer acquisition costs, disruption, and friction during the ordering process, as the user manages everything on one interface throughout the entire purchase. An excellent example of a FinTech-enabled marketplace is Amazon (marketplace) which has a built-in electronic payment solution, Amazon Pay (Adevinta Ventures, 2021).

Risks posed by digital financial services

The use of FinTech can also present entirely new risks. The risk associated with AI-based solutions is that decision-making processes often occur without human intervention; customers and regulators do not fully understand how the algorithms work. Distributed ledger technology-based record keeping, and case management can blur legal and regulatory responsibilities based originally on bilateral agent-agent relationships. PSD2 removed one of the main functions of banks, the sole custody of banking secrecy based on the protection of customer data. Under the PSD2 open banking rules, TPPs can only access customers’ account information after a strict identification procedure. However, it is difficult to check whether the TPP has also subcontracted services to another company, as this could result in sensitive customer data leaking from the given cycle. TPPs typically conclude such contracts for digital applications or new interfaces (Müller & Kerényi, 2021). However, customers’ openness to artificial intelligence and promptness may reduce or mask risk sensitivity.

The financial sector has always been a popular target for cyber-attacks, but the pandemic has increased the digital presence of businesses and consumers, providing a new attack platform for hackers. Phishing and identity theft have become more common, and with the development of AI and ML, the technological sophistication of cyber-attacks has increased. Remote electronic banking has also become commonplace in banks, leading to the emergence of fraudulent activity related to the epidemic (MNB, 2021a).

In financial service processes, data can pass through many participants. Networking, or hyperconnectivity, is the phenomenon where all the participants involved in a given process are in a close, information-based connection. Thus, if one company’s data in the network is compromised, this can have a negative domino effect on other companies’ data. The interdependence of the participants in the network can be considered a weakness in contrast to the efficiency of information flow.

In markets where data is highly concentrated, the network effect is particularly large, and the costs of financial intermediation are reduced. Such market structures attract new entrants, but the resulting concentrated market power can be regarded as a disadvantage rather than an advantage. A prime example of this was when in November 2020, the US Department of Justice filed a lawsuit against the merger of Visa (a payment service provider) and Plaid (a FinTech data aggregator), which failed in early 2021. Each piece of data (e.g., payment information or a list of products viewed by a customer) has added value when combined with an existing huge data set. Therefore, data is more valuable to BigTech and similar firms with diverse businesses and high technology, which can develop into digital monopolies (Feyen et al., 2021). New infrastructures such as API platforms for payment and lending or distributed ledger technology systems can generate substantial network effects. They can transform or even eliminate the role of certain market participants (Arner et al., 2020).

Examples of security measures and methods to counter financial cyber risks

The use of new technologies has also increased the cyber risk to data. The EU introduced the GDPR (General Data Protection Regulation) to protect personal data. It was followed by PSD2, which includes several cybersecurity requirements, notably Strong Customer Authentication (SCA). This can help prevent phishing attempts because even if a customer’s password is obtained, it is not enough to make a transfer because another authentication element (e.g., a fingerprint) is needed to initiate the transaction (MNB, 2020). From 1 January 2021, SCA is compulsory not only for electronically initiated transfers and physical bank card payments but also for online bank card payments. This means that when paying online, it is no longer sufficient to provide your payment card details and a confirmation code sent by SMS. However, the non-application of SCA is subject to an optional exemption rule for the initiation of remote electronic payment transactions,

where the transaction monitoring mechanisms have identified the item as low risk. If the payment service provider makes use of the exemption rule, i.e., decides not to provide SCA, the customer's account manager is fully liable for any damage caused by the lack of such authentication. As the application of the exemption rules is left to the individual decision of the payment service providers, there may be differences in the practices of the account managers. As a result, customers have found that SCA is not always mandatory. SCA requires payment service providers to have transaction monitoring mechanisms in place to detect unauthorised or fraudulent payment transactions, but their real-time implementation is not mandatory. In view of the risks involved, the expectations of the Central Bank of Hungary regarding bank fraud prevention systems are different: banking systems must be able to detect payment attempts that are likely to originate from a source other than the legitimate owner of the funds or that do not follow the customer's usual transaction pattern in real-time, with a high degree of certainty (MNB, 2021b).

PSD2 required the European Banking Authority (EBA) to establish a central database – a register – of specific categories of financial firms (e.g., electronic money issuers, PSD2 service providers, etc.) providing services in EU countries. In cases where the financial service provider is not listed in the central register, the bank may block the API call made by the provider. It is of particular importance for banks, as it they who are primarily liable in cases of fraud, rather than TPPs (Németh, 2019a).

Online transactions can be carried out in two models. Many traders use the so-called three-party payment model because the first card acceptors socialised the market to this model.

In this model, a service provider for card acceptance is inserted between the trader (online store) and the customer in a given transaction. During the transaction, the customer is redirected to a particular payment interface, where they enter their payment card details and pay, upon which the trader receives a confirmation note. In this model, the card acceptor operating the payment interface is responsible for the security of the sensitive banking data provided there. In a two-party payment model, the customer remains on the trader's interface until the end of the purchase process, when the trader transmits the customer's payment card details to the acceptor in the background. In this model, the trader is responsible for data security. To be able to use the two-party payment model, the trader must have a system and certification that complies with the PCI DSS standard for card schemes. If the trader's system does not meet the requirements set by the standard, the trader can only make online payments in the three-party model (Schmidt, 2018).

The PCI DSS (Payment Card Industry Data Security Standard) is a set of requirements developed by the Payment Card Industry Security Standards Council. The standard was developed by Visa, MasterCard, Amex, JCB and Discover. It includes clear guidance for traders on the security solutions they need in order to manage card data. The rules ensure that online transactions are secure and

that payment card details cannot be obtained by phishing.

Interpreting the well-detailed PCI documentation is a challenge for inexperienced professionals. Completing the 60-page self-assessment questionnaire and the level of certification required are not always trivial issues, so the involvement of external consultants and experts may be necessary for the implementation. Once successfully certified, the system will be subject to a regular review, which can only be carried out by a security company with the appropriate licence. The overall implementation process can amount to thousands of euros and the annual maintenance is also in the hundreds of euros, which is either unfeasible or financially burdensome for smaller retailers (Schmidt, 2018).

Methodology and data

Due to the novelty of the topic, the uncertainties and dynamic changes in the industry, and the limited amount of domestic and international data available, this research will be conducted using a qualitative approach to ensure effectiveness. To answer the research questions and to explore more profound relationships, our primary research involved preparing and reviewing a small number of subjects in the case studies. We have used four case study of FinTech companies in Hungary to illustrate the services, business models, data analytics tools and risk minimisation methods of the selected companies in the light of the trends, financial technologies, risks, and regulations presented in the literature. We have also highlighted the new potential risks arising from the disruptive technologies and business models applied by the FinTechs studied when providing their financial services.

One of the main criteria for selecting the companies was that they operate in different areas of activity in the FinTech market to showcase several possible application areas of disruptive solutions and explore risks in multiple areas. Focusing on the main areas of activity of the Hungarian digital financial sector, we selected Barion from the electronic payment service providers, FintechX from the open banking and data aggregation area, SEON from the online payments risk analysts and Bankmonitor from the comparison platform operators as the case study subjects. All four of the selected companies were included in the "25 most promising Hungarian FinTech companies" list published in 2016 (T-Systems, 2016) and in the "20 most promising Hungarian FinTech companies" list published in 2020 (FinTech Group, 2020).

We used various data collection tools to prepare the case studies, such as annual reports, internet sources and archives. In addition to the publicly available sources, we have included online in-depth interview materials with Barion's founder and CEO in the case study, enabling us to supplement our case study with up-to-date, primary source information.

The case studies are structured according to a pattern: the first section highlights the given company's main profile and outstanding successes, followed by a brief description of its products and services. Net revenue was convert-

ed at the 31 May 2022 exchange rate, the date which is the deadline for the disclosure of annual financial statements in Hungary. We will also address the security measures, methods, and regulations by which each business conducts its activities. Finally, for each company, we briefly summarise the disruptive technology that the company is using and what we think the new potential risk could be.

Due to the small number of companies included in the case study, the research results are qualitative and cannot be used to draw generalised conclusions on the subject.

Results and their evaluation

In recent years, FinTech companies have provided services in both B2C and B2B business models in Hungary. In the former category, the best-known providers in Hungary are Simple, Koin, Bankmonitor, Revolut, TransferWise and PayPal. The latter category is dominated by solutions that support the operations of traditional financial service providers, such as credit rating and fraud prevention. The best-known solutions are Blueopes, Aggreg8 (FintechX) and SEON. Most of these companies mentioned are increasingly strengthening their international presence in the digital financial market.

The Barion Payment case study

Barion Payment (*Table 1*) is engaged in electronic payment transactions in the retail and corporate banking, which was previously an activity exclusively associated with commercial banks. Barion is the first Hungarian company to have an e-money licence, which allows it to acquire retail and business customers faster with a simplified KYC process. In the corporate business, it provides card payment solutions for webshops (B2B) and P2P (peer-to-peer) money transfers (e.g., mobile payments) for the general public (T-Systems, 2016, FinTech Group, 2020).

Table 1

Barion Payment basic data

Barion Payment Zrt.			
Date of foundation:	30/06/2015	Net revenue:	1,006,512 thHUF 2,554.28 thEUR
Main profile:	Processing electronic payments		

Source: OPTEN (2022) authors' editing

Barion is one of the most promising FinTech companies in Hungary, with several FinTech activities. It was the first to introduce SCA in Hungary and to have an e-money licence. As part of its electronic money issuance activities, it operates its wallet, linked to a FinTech-enabled marketplace model. It allows traders using the service to sell products/services to their customers, who can then pay from their registered Barion wallet using Barion's smart payment gateway. According to Kiss (2021a), Barion is a combination of a FinTech and an AdTech (advertising technology) company. In the payment services sector, competitive advantage can be gained either through cost savings or through more efficient operations. Barion dif-

ferentiates itself from incumbents on another front besides its cost-efficient payment service. When using Barion's smart payment gateway service, the merchant may choose to provide Barion with data on its customers for a lower fee, subject to their prior consent. Barion places great emphasis on monetising the data collected in this way, both to help the merchant to gain more customers and to generate a significant revenue stream for the business.

They differentiate themselves from other digital financial service providers in the domestic market with low transaction costs and fees, and data monetisation activities. In our view, the market position of FinTech companies is closely linked to the customer experience, which includes pricing. Therefore, providing services free of charge to the customer, which of course, brings revenues in the background, is a very effective way of attracting a large number of customers and thus gaining a larger market share.

Due to its PCI DSS certification, it can provide services in a two-party payment model while protecting customers' payment data. PCI is the highest level of expectation that Barion is required to meet. By incorporating the SEON tool (see more details in the SEON case study), a risk analysis is performed for all online transactions. If the result of the risk analysis shows that the payment is low risk, or the merchant wants to make the payment as smooth as possible for their customers, the merchant can request that no SCA is required for that payment. The card issuer may choose not to accept the merchant's request and still perform SCA, or it may choose to accept the merchant's request. If SEON's risk analysis shows that the transaction has parameters or facts that indicate that it may be fraudulent, Barion will reject the merchant's request to make the transaction a payment without SCA. If fraudsters are successful and the cardholder reports this, they can request a refund. There has been a major precedent in the course of Barion's existence, in which fraudsters have attempted to commit tens of millions of dollars' worth of fraudulent activity, most of which has been caught by the system. However, card fraud has fallen sharply since the introduction of SCA on 1 January 2021, and is now negligible compared to what it was before (Kiss, 2021a). In our view, Barion has introduced mandatory rules that provide a relatively high fraud prevention rate, but the company still cannot guarantee full protection against fraudsters.

They use their optionally implementable tool, Barion Pixel, to collect data for risk analysis and marketing activities, which they can use to understand their customers' habits better and thus provide a more personalised service. Through the way cookies work, an ML-based system can see what events users have been associated with or have carried out themselves. Based on these events and their parameters, the system classifies different users into different segments (Kiss, 2021a). It is, therefore, clear that Barion is taking advantage of the opportunities offered by Big Data. The various data processing and storage processes (e.g., payment card numbers stored in the system, customer data collected through cookies) also carry a fundamental risk of misuse. Barion has introduced mandatory

rules that provide a relatively high fraud prevention rate, but the company cannot guarantee complete protection.

The FinTechX Technologies case study

FinTechX (Table 2.) was established in 2019 by the merger of the three companies shown below (Wyze, Aggreg8, FintechBlocks), whose founders have already presented their disruptive ideas in several FinTech fields. In late 2017, they received their first venture capital investment, and in 2018 their data aggregator solution won them the FinTech Show.

As the merged business entity retained the separate activities of the three participating companies, they are presented separately in the case study.

Table 2
FinTechX Technologies basic data

FinTechX Technologies Zrt.			
Date of foundation:	25/11/2019	Net revenue:	120,050 thHUF 304.66 thEUR
Main profile:	Open banking, financial data aggregation		
Wyze PFM Kft.	Aggreg8 Kft.	FintechBlocks Kft.	
13/12/2016	12/04/2017	21/04/2017	
Development of cost tracking and unbranded FinTech applications	Financial data aggregator, the first AISP in Hungary	API aggregator solution, banking innovation platform, supports PSD2 compliance	

Source: OPTEN (2022) authors' editing

FinTechX has been placed on the list of the most promising FinTech companies with three extraordinary ideas:

– Wyze's personal financial management app provides a user-friendly way to get an overview of your finances in relatively little time. The company is also involved in the development and unbranded resale of innovative FinTech solutions through other white-label development activities. According to the operator, data stored on Wyze.me is encrypted using state-of-the-art security measures. The data downloaded to the user's computer is sent to Wyze's servers via an https connection, and anonymised, including, for example, the username + transaction details (e.g. duckling2, Vodafone, 10 000 Ft). This anonymisation also provides protection if someone hacks into their server, as the hacker cannot know who the transactions of the duckling2 in the example belong to. This is possible because the company's CRM system, and thus the real or "masked" identities provided by the users, are physically located on separate servers, which do not interconnect in any way. Aggreg8 Ltd. is the operator and developer of the Wyze.me user interface, and therefore it – and the authority supervising it (Central Bank of Hungary) – guarantees the protection of data. Wyze's cost-tracking application handles sensitive financial customer data and protects against leaks using server-side synchronisation. As the founder admits, although it is much safer than the standard practice in Western countries, there is no guarantee that a phishing scammer cannot intrude into the download process.

– Among the merging parties, Aggreg8 was the first AISP registered in Hungary by the Central Bank of Hungary. Since then, in addition to Aggreg8, three companies have been awarded AISP licences (Turzó, 2019): Appspect/Recash, Számlázz.hu, and Zedna/Ginger App. FinTechX's Aggreg8 project is based on a financial data aggregator solution that provides contracted business partners with access to the banking data assets opened by PSD2. Aggreg8 can synchronise not only the transaction history of the customer's bank accounts but also the billing information of utility bills in one interface. Aggreg8, as a registered AISP, is entitled to access the account information of its bank customers – with their prior permission – and as a TPP, is an additional element of the information network, which can pose a risk according to the literature. In its RegComp service (license-as-a-service), Aggreg8 acts as a TPP between the business and its customer, to take the burden of legal compliance off the shoulders of the business, which would not have the right to access its customer's banking transaction data directly. Aggreg8 forms a three-party contractual structure between the business, its customer and Aggreg8, where:

- The business wants to use/integrate bank account information into its business processes and/or product/service offerings (e.g. accounting automation, credit scoring, tracking of invoice payments in the case of billing software, etc.) and therefore uses Aggreg8's RegComp service.
- Aggreg8, as a registered AISP, is entitled to access the invoice information of the client of the company, but in order to do so, the client must first contract with Aggreg8 to grant permission to access their data.
- The customer then grants Aggreg8 a mandate to share the bank account information received with the RegComp service provider in the context of an information sharing service.

So, as a TPP status company, Aggreg8 helps service providers to take advantage of the opportunities offered by the PSD2 regulation without using their own resources. In our view, it is a hazardous activity for Aggreg8 to transfer bank customer data within its RegComp service (with customer consent) to parties that do not have an authorised TPP status approved by the authorities. The security of the transfer of this banking data is determined on the one hand by the subjective judgement of Aggreg8 when contracting with an external partner, and on the other hand by the client's permission to transfer the data.

– The third participant in the merger is FintechBlocks, which creates a platform-as-a-service solution between banks and FinTech companies that can be easily connected to by either party, making the connection between FinTech companies and banks' systems faster and more efficient. By implementing the system, banks can also meet their legal obligations under PSD2. For data processing, FinTechX uses machine learning and other artificial intelligence-based solutions. FintechBlocks provides a cloud platform service, which would be considered risky in principle, but in the process, they build a private cloud inside

the bank's firewall, connected to the bank's central systems, so it is not a public cloud but a kind of internal private banking network. However, bank employees' ethical and law-abiding conduct is the only way to prevent fraud from being transferred from an internal banking network to public or private networks.

The SEON Technologies case study

SEON (Table 3) offers fraud detection solutions for various industries: banking and insurance, online gaming and gambling, online lending, e-commerce, travel and ticketing, payment gateways, cryptocurrency, and commerce. For each industry, it provides a customised solution for a specific purpose. Of the industries just mentioned, only those related to finance were considered in our paper. On the financial side, SEON is developing a fraud prevention system that uses machine learning to filter out potential fraud in online transactions. Its clients include OTP Bank, Gránit Bank and Barion, among others.

Table 3

SEON Technologies basic data

SEON Technologies Kft.			
Date of foundation:	10/01/2017	Net revenue:	673,826 thHUF 1710 thEUR
Main profile:	Risk analysis of online bank card payments and authentication points		

Source: OPTEN (2021) authors' editing

SEON has built a fraud prevention system offered to users in two fraud detection tools with different levels of analysis. During data collection, a risk profile is created, and the system expands into a complete risk profile based on existing data from various public and community sources. A given transaction is immediately classified during risk analysis using machine learning models. Their fully-fledged fraud management system analyses the online behaviour of the subjects and the digital fingerprint of the device used to log in. It enriches data in real-time, using, among other things, social media profiles. Only the more complex tool needs to be integrated (which takes a short period of time), and once activated, it immediately reduces the risk of transaction fraud. Through machine learning, the system continuously improves its efficiency by learning from previously detected fraud cases, and the user can customise almost everything (e.g., rights, risk assessment thresholds, etc.) through an API.

Barion and SEON have agreed to better combat cyber fraudsters who activate themselves during online card payments. SEON's fraud detection tool has been integrated into Barion's payment system, which can detect nearly 80% of card fraud attempts. Prior to the installation of the tool, Barion employees tried to filter out suspicious transactions during regular working hours manually, so suspicious transactions in the evenings and on weekends had to "wait". It quickly became apparent that a perpetual backlog is not sustainable in an online market where transactions occur 24/7. It was also essential for the growth of the

business to keep the number of frauds as low as possible. Barion found the design of SEON's UX (user experience) and UI (user interface) extremely appealing, and the benefits of adding its fraud detection tool were immediately apparent. Due to machine learning, Barion's fraud detection system became increasingly efficient (Kiss, 2021b).

Even though SEON is a risk prevention company, its operations may still involve some risk. In our view, by integrating their tool in the transaction process, they embody another risk point, as sensitive information is passed through another participant.

During risk analysis, a transaction is immediately classified using ML models, but the decision process remains completely transparent. When scoring or levelling risk, there are predefined rules based on existing industry-specific data, but the user can also add new rules to the system, possibly company-specific ones. ML also creates new rules, which the user approves for inclusion. In the risk scoring process, the rules mentioned add or subtract a risk score for a given case, and then a final score is generated that can range from 0 to 100, where 0 is risk-free and 100 is the extreme risk level. When an online payment is made, if the system considers the likelihood of fraud to be high, based on the user's preferences, it automatically blocks the transaction. In the case of a lower risk of fraud, the merchant will receive an email about the suspicious purchase attempt, in which case it is recommended that the company uses, for example, the telephone as another channel to verify that the cardholder has indeed tried to pay with the card. To use SEON tools, one subscription is sufficient, access to the system can be shared between staff, and one can also personalise the privileges associated with the type of access. The risk assessment parameters of their fraud detection tool are – to a minimum degree – customisable and thus, in our opinion, can be manipulated to a small extent. The threshold at which a transaction is considered risky can be set higher, which we believe provides an opportunity for users of the tool to manually "pass" fraudsters through the check.

The Bankmonitor case study

According to FinTech Group (2020), Bankmonitor (Table 4) has wedged into the traditional distribution chain – between banks and their customers – following a classic marketplace logic, using a digital agent approach to help consumers quickly find financial products that best fit their individual needs. Its target market is the retail and SME market and financial service providers through its activities as an agent.

Bankmonitor helps users compare retail and corporate products with comparison platforms and their calculators and then helps the customer find the best, personalised offer and conclude a contract. With this end-to-end (E2E) solution, they assume a leading role among domestic non-bank service providers. The company is owned by Hungarian individuals who are entirely independent of banks, so their objectivity is guaranteed in this respect. The agency, multiple agency, insurance agency and membership agency activities related to certain products on the web-

site are carried out by Bankmonitor Partner Ltd. under the supervision of the Central Bank of Hungary. For website visitors, the Bankmonitor service can be free of charge because the vast majority of its revenue comes from banks.

Table 4

The Bankmonitor case study

Bankmonitor Kft.			
Date of foundation:	14/12/2011	Net revenue:	342,642 thHUF 869.54 thEUR
Main profile:	Platform to help the comparison and selection of loan/deposit schemes		

Source: OPTEN (2022) authors' editing

From 1 January 2019, Hungarian law allows banks to identify their customers through indirect customer due diligence. So, you can open a bank account in non-real time, for example, by sending a selfie video or a picture, taking a photo of your identification documents and providing the relevant details electronically. In cooperation with Bankmonitor, the CIB Bank was the first financial institution in Hungary to offer its customers a discount bank account opening service with an online process available all day long. The bank checks the application and, if approved, opens the account the next working day (FINTECHZONE, 2020).

Personal loan disbursements and bank account opening are now fully digital. The website also collects non-personal statistical data that cannot be used for individual identification through cookies for remarketing and website development purposes. In addition, the cookies also look at how users use the website, and what activities they have done there, in order to be able to send a more relevant offer to the customer. The system also saves the parameters of previously visited calculators so that the user can return to the page and continue the search where they left off.

Bankmonitor treats the information that comes to its knowledge in the course of its relationship with the client as banking secrecy in accordance with the relevant legal requirements and retains it without time limitation, even after the business relationship has ended. In its terms and conditions, Bankmonitor also describes that the purpose of the mediation agreement between the client and Bankmonitor – among other things – is to analyse and provide the client with competing financial services from at least three financial institutions, where such a volume is available on the market. In our opinion, the fact that Bankmonitor, as an external service provider, also handles data that constitute banking secrecy poses a huge risk, as the leakage of such data would provide fraudsters with opportunities for abuse and deception.

It is clear that Bankmonitor takes advantage of the benefits of Big Data to deliver the best possible customer experience for its users. In our opinion, a source of risk is that customers' non-personally identifiable data may still be identifiable to external third parties (e.g., Facebook, Google) in cases of transfers for marketing and remarketing purposes. In our view, a further risk factor would

be implied if the objectivity guaranteed by Bankmonitor were to be compromised, as this platform, which is the dominant one in Hungary, could have a significant impact on customers' financial choices and thus on the competition between financial institutions in the market.

Conclusion

A summary of the case studies of the companies is presented in the table below (Table 5). All the examined FinTech companies work with disruptive financial technologies. The case studies clearly show that the disruptive technologies and business models mentioned in the literature are implemented in the practice of the companies studied. Based on the results, many of these FinTechs use machine learning and other AI-based solutions, and also take advantage of the benefits offered by Big Data to provide an even better customer experience.

From our standpoint, in addition to speed and efficiency, AI technologies applied to critical decision-making may raise the possibility of loss of control or deterioration in effectiveness. Phishing can also threaten financial service providers working with Big Data and their customers. In addition to violating customers' GDPR rights, the possible leakage of sensitive financial and customer data provides opportunity for abuse by fraudsters.

Infrastructure and cloud-based services, as well as the involvement of TPPs in processes, mean that sensitive information is passed through multiple participants. This kind of networking has a negative impact, as it provides hackers and phishers with more attack surfaces.

We have explored the changes in the financial sector due to digitalisation and the appearance of disruptive technologies and new business models which pose several novel risks. We have also collected examples of security measures and methods to counter financial cyber risks. After synthesizing the relevant Hungarian and international literature, we used the case studies of four FinTech companies in Hungary to illustrate and evaluate the extent to which the disruptive technologies and business models mentioned in the literature are implemented in the practices of the selected companies and what risks can arise when applying them. Based on the synthesis of the literature reviewed, it can be concluded that platformisation strongly determines the provision of financial services. Overall, it can be stated that several new potential risks are currently developing from the use of disruptive technological solutions and business models.

We consider that the cooperation of banks and FinTech companies is a crucial priority to preserve traditional values and facilitate the spread of disruptive technologies. An understanding of the fundamentals of disruptive financial technologies by employees and management would help to avoid inefficiencies in decision-making control resulting from the use of AI. The technological sophistication of cybercrime occasionally outstrips the effectiveness of protective measures, so the continuous improvement of cybersecurity measures is essential. Boosting the resilience of the financial system to cyber-attacks is a priority

Table 5

The summary of the case studies of the companies examined

Viewpoints	Barion Payment	FinTechX Technologies	SEON Technologies	Bankmonitor
Applied disruptive technology, business model	<ul style="list-style-type: none"> e-wallet the payment gateway for external and internal use KYC BigData AI, machine learning FinTech-enabled Marketplace data monetisation 	<ul style="list-style-type: none"> PFM AISP API cloud white-label FinTech development license-as-a-service platform-as-a-service 	<ul style="list-style-type: none"> BigData KYC AI, machine learning API data enrichment high-level UX, UI online transaction fraud prevention 	<ul style="list-style-type: none"> BigData comparative platform service online calculator digital agent and intermediary (E2E)
Sources of risk	<ul style="list-style-type: none"> networking leaks of sensitive financial and customer data misuse of data, deception loss of control due to AI 	<ul style="list-style-type: none"> an external party is involved in the process networking leaks of sensitive financial and customer data misuse of data, deception data transfer to participants that are not necessarily secure 	<ul style="list-style-type: none"> networking leaks of sensitive financial and customer data misuse of data, deception manual fraud authorisation loss of control due to AI 	<ul style="list-style-type: none"> manipulation by subjective advice leaks of sensitive financial and customer data that constitute banking secrecy

Source: own compilation

to reduce systemic digital financial risks and protect consumers. Close cooperation between central financial regulators and cybersecurity professionals is also crucial to develop strategic and regulatory responses to cyber-attacks.

This paper studies the financial solutions and their risks in 2021, in four Hungarian companies only. Therefore, in a future work one should extend the scope of the study to the V4 countries or the European Union as well. An aspect of the future work could be the information-asymmetry on the financial market which distorts market mechanisms.

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THE VALUE OF LEADERSHIP IN SMALL ENTERPRISES FROM THEIR EMPLOYEES' PERSPECTIVE

A VEZETÉS ÉRTÉKE A KISVÁLLALKOZÁSOKBAN AZ ALKALMAZOTTAK SZEMPONTJÁBÓL

Leadership is a well-studied subject, yet the rich intricacy of relationships between leaders, followers, and their situations continually intrigues researchers. This research aims to fill a need in the literature by using a qualitative approach to identifying the ideal attributes for small independent restaurant owners to develop into successful leaders by soliciting input from the restaurant's employees. To better understand the importance of leadership in small enterprises, this research used a qualitative methodology to inquire into present leaders' thoughts and experiences. Qualitative data was collected via interviews with a small Indian restaurant and its two branches with twelve employees. The interviews were conducted in two separate focus groups. The goal of this case study is to get an understanding of the participants' experiences through their own words. The findings of this paper revealed several relevant qualities of small business leadership, especially restaurants, such as respect, compassion, effective communication, experience, and good organization.

Keywords: employees' perspective, leadership, organizational behavior, small business

A vezetés elmélete és gyakorlata alaposan tanulmányozott téma, de a vezetők és követők közötti kapcsolatok és helyzetek komplexitása továbbra is foglalkoztatja a kutatókat. Jelen kutatás a szakirodalomban meglévő hiányt kívánja kielégíteni azáltal, hogy kvalitatív megközelítéssel azonosítja a független kis éttermek tulajdonosai számára a sikeres vezetővé váláshoz szükséges ideális tulajdonságokat, az étterem alkalmazottainak véleményét kikérve. A kisvállalkozásokat vezető gondolatainak és tapasztalatainak vizsgálatára, a vezetés fontosságának feltárására a kutatás kvalitatív módszertant alkalmaz. Az adatok egy tizenkét alkalmazottat foglalkoztató kis indiai étteremből és annak két fiókjából kerültek feldolgozásra interjúk segítségével. Az interjúk két külön fókuszcsoporthoz készültek. Az esettanulmány célja az volt, hogy a résztvevők saját szavaikon keresztül értelmezzék és tudatosítsák tapasztalataikat. A tanulmány megállapításai a kisvállalkozások, különösen az éttermek vezetésének számos fontos tulajdonságát tárta fel, mint például a tisztelet, az együttérzés, a hatékony kommunikáció, a tapasztalat és a jólszervezettség.

Kulcsszavak: alkalmazotti perspektíva, vezetés, szervezeti működés, kisvállalkozás

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SMEs are crucial to the modern economy, particularly in terms of job creation and GDP development (Wagener, Gorgievski & Rijdsdijk, 2010). Over the last two decades, traditional employer-employee interactions have shifted to become more informal. According to Statista Research Department, between 2012 and 2020, the total number of Hungarian restaurant businesses remained approximately 25,000 strong. By 2025, it is anticipated that

Hungary's restaurant and mobile food service industries will generate around 2,987.23 million dollars in revenues. "The Restaurants & Takeaway Food Operators sector in Hungary is valued at €3.0 bn and is ranked 16th in Europe in 2021 (of 27 total EU countries). The industry's rank (23rd) has remained unchanged since 2018 (IBIS World, 2021). However, by 2021, there were just 23,700 restaurant businesses. Furthermore, the restaurant industry is one of

the fastest-growing sectors in Hungary's economy, and the restaurant and fast-food service business employed 82,511 people in the year 2022. In the meantime, the COVID-19 pandemic, which had already claimed over 3.7 million lives across the globe as of 8th June 2020 (WHO, 2021), has also had an impact on the global economy, affecting businesses in all industries including the food industry, and therefore posing a threat to the nation's ability to maintain its level of food security (Aw et al., 2021). The Mathias Corvinus Collegium's School of Economics and IFKA Public Non-Profit Ltd. undertook a collaborative study on the effect of the coronavirus pandemic and the crisis on Hungarian small and medium-sized firms between February and May 2021 (Pogácsás & Szepesi, 2022). The study was constructed using a theoretical and empirical framework focused on the role of leaders and perception bias, with specific attention paid to SMEs with a high degree of internationalisation.

However, not all SMEs, especially small restaurants, can continue their business successfully. Leadership has been identified as one of the numerous factors that contribute to this high rate of failure (30%), along with a number of other factors (Parsa et al., 2015).

No matter the situation, effective leadership characteristics and behaviors inspire employees to maximize their work efficiency and achieve their highest objectives. Strong leadership is required for one's professional development. Credible leadership and management are the foundation pillars of a healthy and stable organization. It is crucial for any business to have dependable leaders who can come up with new ideas if necessary and effectively inspire their employees to put their best effort forward and help their organization weather difficult times. That being said, perceptions of effective leadership are also rooted in ideology and shaped by discrepant value systems (Hyatt & de Ciantis, 2012).

The role of a leader has changed throughout time, and not every leader is effective. What kind of leader is needed and how successful they will be as a group's leader depends on the specifics of the scenario. This article will discuss what it takes to be a great business leader and the qualities necessary to lead others. Besides these, we will also discuss the kind of leadership traits that are crucial in the hospitality industry.

Leadership abilities are particularly crucial in the restaurant industry as such companies often hire students who lack sufficient experience, so leaders must be patient and teach them how to manage scheduling conflicts and steer the group in the right direction.

For this case study, I chose one of the successful restaurants providing Indian cuisine. There are several reasons to examine this restaurant. Even though the restaurant was managed by a successful businessman who could be considered a strong leader who always managed to cope with emerging difficulties, the employees changed very frequently. Thus, the analysis of this case proved challenging in terms of gathering interview data.

Additionally, the majority of leadership studies have been done on the staff of big enterprises, like hotels or

franchise restaurants, ignoring the staff of smaller organizations, particularly independently owned restaurants run by a person or people who live on the premises. Less effort and time spent studying leadership strategies in small business settings, including these small independently owned restaurants. The analysis of the development in leadership practices among small restaurant enterprises is also limited, leaving behind a research gap ripe for scientific scrutiny.

The structure of this paper is as follows. First, it briefly introduces the relevant literature on leadership, leadership styles and values. It will then present the methodology of the qualitative research and concludes with the findings thereof and a discussion on the practical implications and limitations of the analysis, as well as the possibilities for future research.

Literature review

Leadership theories

Even though leadership has been extensively researched, new studies continue to be conducted on the subject. The consequences of poor a major cause of corporate failure, for example, has been the subject matter of academic research in this field (Badshah, 2012; Kreitner & Kinicki, 2013; Park & Leeds, 2013). Other aspects, including leadership theories, have been studied in a variety of research, Wren (1994) mentioned that the characteristics of leaders (personal characteristics, culture, and behavior) were factors that affect success or failure in producing results (as cited in Valdiserri & Wilson, 2010).

In the early 20th century, when scientists first began studying leadership traits, they generally believed that great leaders have innate attributes that distinguish them from others (Mann, 1959; Stogdill, 1948).

Strong leadership is essential to the success of a business and its employees. Leadership establishes the tone and the organizational structure that distinguish a company from another. Different types of effective leadership will be discussed, such as strong leaders, results-oriented leaders, servant leaders, charismatic leaders, courageous leaders, leaders who work well with others, inventive leaders, and tribal leaders.

Leadership is most effectively measured by its ability to inspire followers to adopt new perspectives or practices; hence, a charismatic and persuasive leader can influence others to follow their ideas (Reese, 2017). Leadership based on core principles has developed through time and in response to societal demands and unethical practices in the past. As a result, several public and commercial sector leaders have been called out for their own immoral or unethical behavior such as falsifying information, promoting their own self-serving personal vision; censure opposing views; demand their own decisions be accepted without question; engage in one-way communication; show insensitivity to followers' needs (Copeland, 2014).

The actions of leaders have been shown to have a substantial effect on the actions of their employees, which in

turn may boost organizational performance (Cheng, Guo, & Lin, 2020).

Since the early 1980s, researchers have defined fresh concepts such as leader-member exchange theory (LMX), transformational and transactional leadership, and servant leadership to conceptualize leadership styles better. As a result, various empirical leadership studies, including the hospitality industry, have been conducted searching for ideal leadership styles across various sectors (Putra & Cho, 2019a).

Leadership values and behaviours in the hospitality industry

The hospitality industry is known as a “people” industry because, in addition to supplying physical, tangible items, it also delivers intangible services to clients, such as face-to-face contacts that necessitate highly service-oriented staff (Putra et al., 2017; Teng & Barrows, 2009). In addition, the hospitality industry is one of a kind in that it is known for being labor-intensive and having an undesirable work environment with often low wages, long working hours, few opportunities for career advancement, and time pressures. All of these factors provide a fertile ground for discovering problems of human resources management and organizational behaviors related to leadership (Pittaway, Carmouche & Chell, 1998).

The first attempt to identify the most relevant leadership values and attributes in the restaurant sector were conducted thirty-one years ago by Cichy et al. (1992) among 100 leaders from fast food, family, and luxury restaurants. Six key leadership characteristics were identified in this survey: (1) Develop a vision, (2) Trust your subordinates, (3) Encourage risk, (4) Simplify, (5) Keep your cool, and (6) Invite dissent. The authors explored that trust was one of the most complex and critical leadership values.

Reynolds (2002) surveyed to examine managerial behaviors among unit-level managers who worked in the chain-restaurant industry. According to this survey, there are ten different managerial skills: Interpersonal skills, Passion/Enthusiasm, Honesty/Integrity/ Strong Ethics, Organizational Skills, Leadership skills, Ability to handle stress, Restaurant Experience, Knowledge, and Skills, Focus on Customer and Flexibility/ Creativity.

Leadership values in the hospitality sector

Values are a concise way of expressing what matters to us personally or collectively (as an organization, community, or other group) (Turkkahraman, 2014). Values are called “shorthand” because the concepts they reflect can frequently be expressed in a single word or a short phrase. Honesty, transparency, compassion, long-term vision, and human rights are only a few examples of values (Žydzūnaitė, 2019). The outward manifestation of our ideals and behaviors is context-dependent (Cubukcu, 2014). Values can be either positive or negative. Friendship, trust, and creativity, for example, are considered as traits that help us connect with people and contribute positively to society (James, 2014).

Leadership in SMEs

Small enterprises are known for contributing to job creation and economic growth in most countries (Legohérel et al., 2004). Because of limited resources, such as capital and human assets, small business management systems are known to be unstructured and poorly established, which means that small business executives may have troubles managing their enterprises (Dawson, 2000).

According to Avolio et al. (2003), small and medium-sized businesses increasingly have a worldwide presence. It is critical to understand how leaders tackle the difficulty of working in an ethnically multicultural workplace that involves differences in values, cultures, customs, and beliefs in this new situation, as well as what comprises successful leadership.

Testa (2001), the way in which workers in the hospitality sector see their leaders has a beneficial impact not only on the efficiency of the leaders but also on the performance of the employees and, as a result, on the success of the company. Because of the potential influence that employees perceptions of their managers leadership styles can have on organizational performance, many scholars conducted research on the leadership styles of hospitality managers as well as employees’ perceptions of the leadership styles of their managers (Ogbeide, Groves & Cho, 2008).

As mentioned earlier, an individual’s ability to successfully lead and persuade others to follow directions is a crucial component of success in business and the workplace (Mumford et al., 2007; Zaccaro, 2001). Despite numerous leadership studies, particularly in the context of the hotel sector, previous studies have demonstrated that different leaders use different leadership styles in order to accomplish their organizations’ aims and that there is no “one size fits all” leadership model (Valdiserri & Wilson, 2010; Zenger & Folkman, 2009).

Furthermore, the owners of small, independently owned restaurants are typically the business’s leaders, and due to limited resources, they must be familiar with nearly all the business’s job tasks (e.g., cook, cashier, and server). Small independently operated businesses lack managerial abilities when compared to chains or franchised restaurants (Putra & Cho, 2019).

Additionally, business owners are under constant pressure to make crucial decisions with little to no input from their staff. This may have a negative impact on morale and ultimately lead to employees looking for new opportunities elsewhere (Detert & Burris, 2007).

Because of this, there is a high risk of failure among restaurants that are owned and run by individual entrepreneur. It is therefore essential to understand the traits of successful leadership in this role since the operations of each small, independent restaurant impact the management style of its owner (Putra & Cho, 2019a).

Leadership styles in the hospitality industry

Effective leadership plays an important role in the hospitality sector. The success of every organization depends on the right leadership style, which must be able to imple-

ment appropriate changes if necessary (Khuwaja et al., 2020). Consequently, many scientific papers on leadership in the hospitality sector have been written to investigate the most successful leadership styles and how they affect employee satisfaction (Putra & Cho, 2019b). Many researchers have investigated both transactional and transformative leadership styles in the hospitality sector. The term “transactional leadership” refers to a style of management that emphasizes the need for direct supervision, strict structure, and the use of rewards and punishments to motivate employees (Breevaart et al., 2014). Transactional leadership implies a partnership in which a leader and follower shift responsibilities in order to satisfy each party’s own self-interests (Bass, 1999; Limsila & Ogunlana, 2008).

The goal of transformational leadership, on the other hand, is to motivate people to act on their better nature and pursue greater ideals via personal connections (Keskés, 2014; Putra & Cho, 2019b). Hinkin and Tracey (1994) researched large hotel management organization workers to determine whether the transformational leadership style is effective. According to the findings of their study, transformational leadership had a very high and positive relationship with all the results, but transactional leadership did not have any meaningful relationship with the outcome measures.

Moreover, Brownell (2010) investigated studies from the publications of the last twenty-five years, and concluded that transformational leadership has been the model that has been most pertinent to those in charge of hospitality organizations.

In addition to transactional and transformational leadership, a more contemporary leadership strategy claimed to be an appropriate match for the hotel sector is the servant leadership theory established by Greenleaf (2002) and further developed, among others, by (Laub, 1999; Wilson, 1999; & Brownell, 2010). To distinguish itself from other leadership styles, as Greenleaf puts it, servant leadership requires leaders to put the needs of others, particularly workers, before their own. Servant leaders thus prioritize the wants, objectives, and goals of their subordinates above their own. Such leaders exhibit the adaptability necessary for success in a multicultural workplace by embracing the good and acceptable features of various leadership paradigms (Brownell, 2010). According to Ling, Liu and Wu (2017) servant leadership has beneficial effects on group trust environment and employee work outcomes such as organizational commitment, job engagement, and work performance, according to a study of 1132 employee–supervisor pairings from 80 departments at 16 star-level hotels in China.

Most leadership indicators have been created without considering the viewpoint of subordinates, instead focusing on leaders or managers. Given that workers are the most crucial assets in any company, learning about and understand their view of leadership is essential for a well functioning company. Previous studies have shown that most employees leave their workplaces because of organizational leadership problems.

Research questions

This study attempts to address the following research questions about leadership in the context of small, independently managed restaurants:

1. *How do employees comprehend a successful leader at a small, privately-owned restaurants?*
2. *What qualities do they consider essential for leaders of such restaurants to obtain?*
3. *What leadership values should leaders exhibit to run their businesses?*

Research Methodology

Research design

According to Miles (2014) and Putra and Cho (2019a), the main criteria was to use their studies to find people who worked in local small independent restaurants: (a) at least 18 years old, (b) presently or previously worked at a small independent restaurant for over six months. According to Parsa et al. (2015) in terms of independently owned has “mop and pop” business structure, employs less than 500 people, and earns less than 7 billion USD annually. Approximately 93% of restaurants employ less than 50 people.

In a relevant study, Miles (2014) utilized multiple methods to select participants for the various focus groups. A combination of snowball and convenience sampling methods, including email, word of mouth, and flyer distribution were used to recruit participants. In order to send out a recruiting letter to students through email, we first sought approval from a number of hotel management experts. Putra & Cho (2019a) used four focus groups which was 16 participants and one dyadic interview. This study used the same interview structure which was utilized by Miles (2014) and Putra and Cho (2019a).

In relation to the interviews, the reviewed secondary data also serves the purpose of triangulation, that is to establish validity and secure consistency across various data sources in the analysis. Triangulation is also an effort to help explore and explain complex human behaviour using a variety of methods to offer a more balanced explanation to readers (Joppe, 2000).

The interview was conducted in semi-structured and the questions were open-ended, exploratory in nature. The semi-structured interview guide provides a clear set of instructions for interviewers and can provide reliable, comparable qualitative data (Stuckey, 2013).

Two focus groups were chosen for making interviews and data collection approach for this study was allowed participants to share in-depth information about their thoughts on the attitudes of small independent restaurant leaders.

Participants

For this study we drew on the experiences of Onwuegbuzie et al. (2009), according to whom a well-designed focus group usually includes six to twelve participants who take part in interview sessions that last between one and two hours. Accordingly, we selected twelve employees for

our case study that were included in two separate focus groups. One group with four respondents, and another one containing eight interviewees. These participants were: the owner of the restaurant, two managers, two cashiers, four waiters, two bartenders, and a chef. As for the justification of organizing the focus groups we relied on the relevant literature that suggest that certain individuals that are essential to a business, meaning people who have particular job experience in small independent restaurants and have specialized expertise to discuss such experience, could be put in separate focus groups containing three or four individuals to fine-tune the interview results (Greenbaum, 1998; McLafferty, 2004; Morgan et al., 2013). Two managers have been working in mentioned Indian restaurant branch for more than eight months. Only two waiters joined this team a few months ago. The chef was experienced and worked for almost two years in that restaurant. The interview we conducted with the owner lasted for 40 min, 30 min with manager, 60 min with two waiters, only one bartender gave interview, 25 min.

Interview guide

In order to facilitate more fruitful and interactive group discussions, researchers often use interview guides (McLafferty, 2004). Researchers should arrange interview questions from general to specific (Kincry, Tiedje & Friedman, 1990). The first four questions were broad in scope (Kincry, Tiedje, & Friedman, 1990), inquiring as to whether or not the respondents planned to work in the restaurant industry, who oversaw daily operations at their respective establishments, what qualities make a good leader in the restaurant industry, and what qualities are most crucial for those in leadership positions in the hospitality sector. After that, questions aimed directly at eliciting participants' opinions on their respective leaders.

Data validation

Focus group research is recognized within academia as a practical and efficient way to collect people's opinions, values, and beliefs (Wilkinson, 2004; Jayasekara, 2012; Morgan et al., 2013). Research interview questions should be organized from broad topics to narrower ones as per (Wilkinson, 2004). We compiled our questions accordingly. To ensure the validity of the data each interview was recorded with their permission. Interview data were transcribed, and coded manually by the author and then reviewed and revised by two qualitatively trained PhD students.

Data analysis

For qualitative data analysis, meanwhile, data coding and theme analysis were used, with the text being broken into small units (phrase, sentence, or paragraph), each unit is labeled, and then each unit is classified into code categories (O'Cathain, 2019). The codes were then analyzed for similarities and grouped into key themes throughout the various instances, although participants' identities were not utilized to preserve their privacy (Nespor, 2000; Starks & Trinidad, 2007).

Coding analysis strategy

The qualitative coding of interview data was done using a technique known as "inductive analysis." (Lee, 1999; Patton, 2002). Inductive analysis is in harmony with the ground theory approach in that major themes are explored "through an analyst's interactions with information" (Patton, 2002). According to Katz (1983), inductive analysis enables researcher to constantly build and improve categories in order to develop a theory that explains a specific phenomena.

In the first data reduction (Lee, Mitchell, & Sablynski, 1999), the data collection procedure was to discover first-order codes that emerged in the interview data. First-order coding includes classifying naturally emerging themes in data; in the first-order coding, "the researcher generates as many categories as are required to organize, interpret, and allocate empirical evidence to these categories in a logical manner" (Lee, 1999). The transcripts of the interviews were reviewed many times by researcher, and first-order codes were given after a brief summary was compiled. Participants' responses on the traits that make followers more or less successful, for instance, stated that a follower needs to be cheerful, have a good attitude, avoid negativity, and look on the bright side. The first-order theme for the group was labeled "respectful". This process was continued until there were enough first-order labels to adequately account for themes throughout the data.

After summary labels were generated for all categories, these labels were used to code all interview data (see summary labels and definitions for first-order codes in Table 1). The qualities of leadership skills and their definitions are described in the table. Each leadership quality is illustrated with examples taken from participants' interviews.

Table 1
Categories of Leadership Behaviors

Categories	Description	Descriptive statements
Respectful	A sense of appreciation, the expression of regard, and/or respect for all employees.	"Keep away "disrespectful behavior" to workers"
Compassionate	Demonstrating compassion and care for the employees.	"Increasing self-esteem, encouraging employees to care more their jobs"
Effective communicator	The style leaders interact with their subordinates	"To say right words when they have to communicate with their subordinates"
Experienced	Having earned experience, knowledge, and capabilities in a specific field over time	„In the end, it's the one with the most knowledge and experience who emerges as the leader."
Organized	careful, methodical, and self-disciplined, and they have a penchant for tidiness and are well organized	"Had difficulty maintaining a well-organized schedule"

Source: own compilation

In this study was not used any software for coding interview. All data was done manually and checked by two Ph.D. candidates who were experienced in qualitative methodology.

Findings and Discussion

The research questions were designed to identify an effective leader in a small, independently owned restaurant as perceived by employees, as well as the ideal leadership attributes. Six leadership qualities were identified that help leaders in small, independently owned restaurants become more successful, as reported by the interviewees (Table 2). These were: respectfulness, compassion, effective communication, experience, and organizational skills.

Before speaking to the employees, I had an interview with the head of the business of the Indian restaurant in question. This 40-minute-long, unstructured interview was informal. In this setting, the questions revolved around the following themes: What criteria do you focus on when hiring staff? Are you interested in employees' perspectives regarding your controlling the workplace? How do you solve issues when they occur among the staff? Are you interested to learn your employees' opinions about you? If so, do you work on yourself, or how do you handle criticism?

Table 2

Qualitative Research Questions and Themes

	Research questions	Themes
RQ1	How do employees comprehend a successful leader at small, privately-owned restaurants?	Respectful Compassionate
RQ2	What qualities do they consider as essential for leaders of such restaurants to obtain?	Effective communicator Experienced
RQ3	What kind of leadership values should leaders use to run their businesses?	Organized

Source: own compilation

Respectful

Throughout this research, the term “respectful” was used to refer to an attitude in which one admires, shows, or has respect for all workers. This included not treating employees differently based on their gender, race, sexual orientation, or age. Two individuals reported having experienced both polite and rude treatment from their superiors in the workplace. One of the waiters, for instance, said that his management had spoken rudely to a few of the staff. He stated:

“He thinks he’s a leader because he’s the boss. And obviously, we do what he tells us to do, but sometimes his behavior is so strange with staffs and too bossy sometimes rude with dish washer or waiters. It is important that your

staff is happy and to work in a good mood. It also influences working productivity if his or her mood is down.”

The second waiter also shared his experience with the same idea and stated: “I have had the same experience that I received disrespectful behavior by the manager. At that moment, I did not inform the owner and kept inside. When you lose your respect, you cannot work in this atmosphere.”

The data presented here demonstrate the value of cultivating a respectful work environment and its potential to boost productivity, particularly for businesses in the hospitality sector, which are notorious for their high employee turnover rates (Kusluvan et al., 2010). This result is consistent with the predictions of organizational justice theories, such as the interactional justice theory, which argues that treating workers with fairness and respect would benefit productivity (Costello et al., 2011).

Compassionate

For workers, compassionate leadership is demonstrating empathy and care. Throughout the discussions, there was a lot of talk about the owner of restaurants that really cared about their staff. For example, the chef of the restaurant shared his experience and stated:

“Once, a client was just disrespectful in our restaurant. He was drunk and started to complain about the food that it is too spicy and started to yell at the waiter. At that moment, we tried to calm down the situation, but he did not want to calm down. The situation was getting serious, and it affected other customers as well. We had to inform the owner, and he came and smoothed the situation. The owner of the restaurant asked to apologize from customer”. He just handled it well.

As a workplace known for its vulnerability, restaurant employees depend on their leaders (Ram, 2018). In addition to feeling safe at work, their leaders' responses may have a good impact on their work performance by increasing their self-esteem and pleasant feelings, as well as encouraging them to care more about their jobs, which may lead to increased productivity (Sprecher & Fehr, 2005). As can be seen, being compassionate is very important for leaders in the restaurant industry.

Effective communicator

The third important leadership trait, according to the responses, was being a good communicator. This is in line with findings of other relevant literature that suggests that poor communication is a common managerial problem that raises employee turnover rates (Brownell, 2010). Most interviews agreed that communication in an organization is essential, particularly in the restaurant business. For example, a bartender who works for long term shared his experiences. The owner has different ways of communicating with employees and stated:

“Once between manager and chef happened serious fight and the owner found out about it from employees later. He called first manager and asked about issue and talked almost thirty minutes with him. Then he called chef and talked with him. After talking with owner both

changed, stayed more friendly each other, we kept asked from them what he said but they did not want to share with us. One thing I really appreciate owner's one behavior, he always listens first then tries to sort out problem. Sometimes it is hard to find suitable words in right moments and it requests from leaders an effort to say right words when they have to communicate with their subordinates."

Leaders express their vision with consistency and comprehension. The same bartender mentioned that there is a huge difference in the behavior of the manager and the boss of the restaurant. The managers sometimes cannot handle difficult situations and arguments easily, but the boss always tries to speak individually and sort out issues politely. He evaluated the approaches of two leaders in their interactions with employees. Even though the boss's opinion is the most decisive factor, employees value their manager's attitude more. The manager was in a position of authority in the workplace and in the company's daily operations. As these results reveal, a leader's communication style has a direct impact on employee performance. It's clear that effective communication is essential at all levels of a business (Fairhurst, 1993). Therefore, a leader's effectiveness may be enhanced or diminished depending on his or her communication style.

Experienced

For the purposes of this research, "experienced" was defined as having earned experience, knowledge, and capabilities in a specific field over time, specifically a career or position in the hospitality industry. Prior study has identified experienced leaders, demonstrating that experience contributes to the development of leadership skills (McCall, 2004). The owner shared his knowledge and stated:

"I started my business when I was 20 years old. I came here for study and tried to open my first restaurant, but it was unsuccessfully. After that I left country and went to London there, I learnt restaurant business one year. Coming back Hungary I opened my cooking school and run one year. Unfortunately, it was also failed. Then I tried hotel business and opened my own hotel due to pandemic situation this business did not work as well. People used to tell me stop it, do not do anymore business it is not for you, try to do other things but I did not give up and kept going on my way. I learnt one thing in my life never listen people do not give up your dreams. From my experiences I realized you will get lesson from your mistakes and learn everyday new experiences. It is my eighth business and now I am planning to open one more restaurant in the city center. I learnt how to deal with people, how to hire staffs, how to sort out problems among employees. I try to be more polite but meantime strict with them. Sometimes I help newcomers how to work, to show them how to deal with customers. It gives me pleasure and I really like my job. It is hard to be good leader, you should listen and feel their problems."

This example illustrates how qualified and experienced leaders can respond to a challenging circumstance and positively affect their team's productivity. A different participant also supported this idea and stated that "in the

end, it's the one with the most knowledge and experience who emerges as the leader". In the restaurant industry, low employee appreciation is common (Kusluvan et al., 2010). If a leader has experience in the restaurant business, they will have a decent understanding of the tasks at hand and will express better confidence when it comes to inspiring and motivating their employees.

Organizational skills

The research concluded that leaders in small restaurants need to be well-organized, which was defined as the capacity to plan and carry out tasks in an orderly fashion. Being organized is related to another trait which is called conscientiousness. Conscientious people have a clear sense of purpose and consistently push themselves to succeed. They are careful, methodical, and self-disciplined, and they have a penchant for tidiness and are well-organized (Bono & Judge, 2004). Leaders with a high conscientiousness level are more likely to follow through on commitments, complete tasks on time, and carefully consider the smallest details (Zillig, Hemenover & Dienstbier, 2002). An example of one of the participants, a waiter stated:

"I did not know anybody when I arrived at the restaurant for my first day of work since I had just moved here. My boss took the time to walk me through the workplace policies and introduce me to the other employees. He was courteous, and he clarified everything in depth. He added that our boss appreciates workers that are disciplined, loyal, and have good tidiness. The manager emphasized to me how important it was for me to stick to the work schedule. In the beginning, it was challenging for me because of my studies; I had trouble keeping track of time and was often late. I also struggled with poor time management, had difficulty maintaining a well-organized schedule. Despite this, they assisted and supported me in becoming used to the routine. I am grateful to them for their support and assistance."

From his experience has shown that even in small business sectors, employees need to be organised and diligent in their work.

Previous researches has shown that being organized may have a positive influence on employee performance. This includes things like keeping employees' work schedules in order and having a training plan for new or present employees (Yang, Wan & Fu, 2012; Tse, Huang & Lam, 2013).

Conclusions

While many studies have been conducted on leadership, most of them have focused on large organizations and have neglected small businesses, particularly one- or two-person restaurants. Therefore, the growth of leadership practices among small businesses, such as modest independent restaurants, is restricted since much less time has been spent discussing leadership strategies in a proper context. Since little is known about what makes a great leader and what qualities make a good one in small, independent restaurants, this study set out to rectify that. Findings indicated

that respect, compassion, communication skills, and experience were a leader's four most important qualities. It was also found that owners in the restaurant business need to have some prior work experience since it is a "people industry". This work experience may help leaders understand the field, which is vital for effectively allocating tasks and rewarding employees, the following two crucial considerations for any manager. In addition to these qualities, owners of small, independent restaurants also need to be sociable, have a steady emotional state, and be well-organized.

Implications for practices

One of the primary goals of this research was to identify the characteristics of successful leaders in small, independent dining establishments. Academics and professionals may learn from this study about the perspectives of workers in small, independent restaurants. Earlier research has supported that workers are a firm's most valuable resource (Cho et al., 2006). Consequently, the findings of this research show that leaders of small restaurants should fully understand how, for example, being more polite to workers and assisting them would minimize the rate of staff turnover. Given the industry's notoriously high turnover rate, such managerial understanding could help the restaurant cut training expenses and improve its services. Because of this, it's important for leaders to communicate respectfully with their staff members, be present, and pitch in during both slow and busy periods to show their appreciation. Employers may workforces fluctuation by using strategies such as giving staff more praise for their good work rather than pointing out flaws.

Implications for theory

Regardless of the numerous leadership theories that have been developed, this study assists researchers in better understanding the ideal characteristics required for leaders to become effective leaders of small, independently owned businesses in the hospitality industry based on employee perceptions. These distinct traits may be discovered in the references for leader characteristics when compared to the most mentioned leadership theories. According to the findings of this study, being polite was the most crucial quality that a leader needed to possess, as opposed to transformational leaders, who are renowned for their charm, inspiring motivation, intellectual stimulation, and customised consideration (Garca-Morales, Jiménez-Barriouneo, & Gutiérrez-Gutiérrez, 2012).

Limitations and suggestions for future research

In this research, we had some limitations and difficulties related to time, comfort zone, assertiveness, and international backgrounds. Getting interviews from employees and the leadership alike was difficult and time-consuming, as they gave different time slots, and sometimes they cancelled an agreed upon appointment. Besides this, there was a genuine reluctance to talk about their superiors as they were afraid getting fired. Employees who worked in this restaurant had different backgrounds and almost all of them, except the chef, consisted of students, who worked

part-time jobs. Despite these aforementioned limitations, future research can be conducted through a similar study using a different method of data collection to decrease challenges in finding the right time and place for the focus groups, which commonly occur in a focus group study.

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HOW GREEN AND DIGITAL TRANSFORMATION SHAPES INDUSTRIES – TWIN TRANSITION TO A GREEN AND DIGITAL FUTURE

A ZÖLD ÉS DIGITÁLIS TRANSZFORMÁCIÓ HATÁSA AZ EGYES IPARÁGAKRA – ÁTÁLLÁS A ZÖLD ÉS DIGITÁLIS JÖVŐBE

Digital transformation creates challenges in nearly all industries and business sectors. In this article we provide a targeted multidisciplinary and horizontal overview of the extensive yet diverse and fragmented literature on digital transformation, clarifying the boundary conditions for investigating the phenomenon from the point of view of GreenTech and sustainability. There is a clear shift in the decisions of all actors toward sustainability, on which GreenTech solutions are built around. Recent studies highlighted the importance of green digitalization solutions, emphasizing the importance of (digital) technology in addressing sustainability challenges as well as in business and consumer use. Consequently, the authors found, the acceleration of the expansion of digital transformation and the role of GreenTech solutions within its ambit should assume greater prominence in the near future given that ultimately there is no energy transition without digitalization.

Keywords: digital transformation, FinTech, EverythingTech, GreenTech, green digitalization

A digitális átalakulás minden iparágban és üzleti szektorban kihívást jelent. Jelen cikkben a digitális átalakulás kiterjedt, sokrétű és szigetszerű szakirodalmának célzott multidiszciplináris és horizontális áttekintését nyújtják át a szerzők, tisztázva a jelenségnek a GreenTech és a fenntarthatóság szempontjából történő vizsgálati peremfeltételeit. Ugyanis egyértelmű elmozdulás tapasztalható a gazdasági döntéshozatalban a fenntarthatóság irányába, amely köré a GreenTech megoldások épülnek. Közelmúltbeli tanulmányok rávilágítottak a zöld digitalizációs megoldások fontosságára, hangsúlyozva a (digitális) technológia jelentőségét a fenntarthatósági kihívások kezelésében, valamint az üzleti és lakossági felhasználásban. Következésképpen azt találták, hogy a digitális átalakulás terjedésének felgyorsulása és a GreenTech megoldások ebben betöltött szerepe a közeljövőben jelentősen növekedni fog. Nem létezik energiaátmenet digitalizáció nélkül.

Kulcsszavak: digitális transzformáció, FinTech, EverythingTech, zöld technológia, zöld digitalizáció

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The global adoption of digital transformation has drastically altered business operations in nearly all industries (Gökalp & Martinez, 2021), as well as solved (but also created) several problems regarding employees' way of work and living (Primecz et al., 2016). Digital transformation can thus enhance the economy. It is anticipated that by 2030, more than 70% of new economic value creation would be related to digital platforms (World Economic Forum, 2023), while digital solutions can reduce global

emissions by up to 20% by 2050 (World Economic Forum, n.d.). However, digital transformation means exceptional opportunities and significant risks at the same time. According to Bughin & Zeebroeck (2017), firms which do not or just partly respond to digital disruption are likely to experience a large decline in revenues and profits (Bumann & Peter, 2019). Numerous conventional businesses are rendered obsolete by the presence of newer and more innovative businesses (Verhoef et al., 2021).

The topic of digital transformation has been addressed by a decent number of researchers in recent decades (Fitzgerald et al., 2013; Stolterman & Fors, 2004; Westerman et al., 2011), but the occurrence of digital transformation as a term in the literature emerged significantly after 2014, according to a quantitative literature review conducted by Reis et al. (2018). Digital transformation is defined variously from many perspectives (Teichert, 2019). According to Schallmo et al. (2017), the term “digital transformation” has no widely acknowledged definition. The term “transformation” describes significant organizational changes that have an impact mainly on strategy and structure. Digital transformation can therefore be viewed as the process of adopting an ever-changing digital landscape in order to satisfy the digital expectations of consumers and producers (Teichert, 2019). McKinsey & Company (2016) also argued that the term “digital” refers less to a single process rather than how businesses operate.

Gökalp and Martinez (2021) stated that digital transformation is described as the realization of disruptive technologies that introduce new business models and operations across all industries. Vial (2019, p. 118) through a quantitative literature review of 282 publications related to digital transformation, came across 23 different definitions, summarizing digital transformation as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies”. Although from this definition it can be assumed that digital transformation is organization-centric, in agreement with Legner et al. (2017), digital transformation can also be understood in a broader sense, such as by individuals and society. Thus, the consumer-centric digital transformation in our immediate environment and our daily lives is understandable. At the same time, from an organizational perspective, the question arises to what extent digital transformation serves real social interests, or is it just an organizational response driven by the constant growth constraint (Hidegh et al., 2014)? Digitalization must provide value for customers, the enterprise, and other key stakeholders (Schallmo et al., 2017). For an ordinary consumer, value is not necessarily created through radical innovation, but by meeting their expectations (Gelei & Kenesei, 2016), and according to Solis & Szymanski (2016), the transformation of technology and business models ultimately contributes to reaching digital consumers more effectively at any stage of their lifecycles.

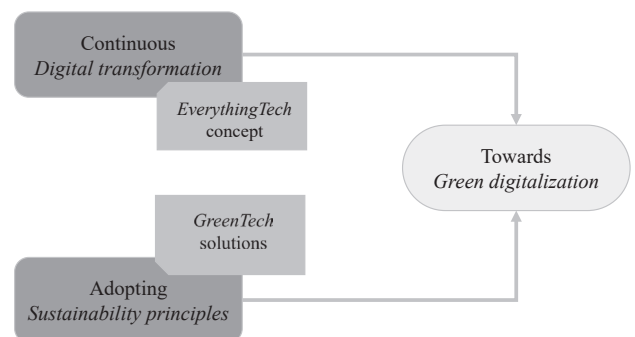
The length and nature of digital transformation projects can vary depending on the age, size and type of the business and the industry in which it operates. According to Verhoef et al. (2021) and Kraus et al. (2021), digital transformation can take place in several phases, through affecting business processes, business models, the supply of products and services, organizational structures, or a combination of all these aspects. Although each may be powered by a different technology, the ultimate objective is the same: namely to keep up with the sectors’ rapid shifts by utilizing new technical improvements to satisfy customers’ demands for quick, smooth, and secure in-

teractions (Dias et al., 2017). It is vital to stimulate the process through appropriate internal processes and by ensuring optimal conditions in the micro and macro environment of the given company to avoid being left behind (Bounfour, 2016). Consequently, digital transformation must be handled holistically since it has social, technical, technological, and management effects on enterprises (Gökalp & Martinez, 2021; McKinsey & Company, 2016; Verhoef et al., 2021).

It follows that digitalization can also be seen as embodying green oriented sustainability and vice versa. The ability to use digital technology to improve sustainability – known as green digitalization – is an essential tool to achieve a low-carbon or even carbon-neutral economy. However, it is important to be aware that digitalization is a two-sided sword as it is not always green. Although the energy consumption and wider adoption of new technologies – particularly in the ICT sector – is increasing in general, along with changes in user habits are often at odds with sustainability (e.g. replacing our electronic devices just to meet current trends and comply with new data protocols and transmission technologies), digitalization also makes production more efficient in many cases, thus sustainability could be measured in terms of replacing traditional systems. Demeter & Losonci (2020) pointed out that sustainability can be an angle to measure the impact of Industry 4.0, while sustainability is also an important aspect within the dimensions of Nick et al. (2023)’s Industry 4.0 maturity model. Ultimately, green digitalization has become one of the most important pathways toward attaining a sustainable future.

Figure 1

An approach to understanding the basis of green digitalization



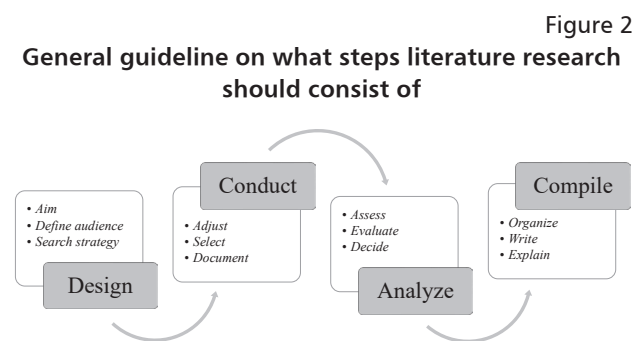
Source: own compilation

This paper proceeds, by presenting the methodological basis for a literature review, followed by introduction of the EverythingTech concept as a starting point with a focus on FinTech as its key pioneering element. This precedes a comprehensive comparison of digital transformation-specific themes and examples in various industries. Subsequently, when we discuss the conceptual approach of GreenTech, presenting its main characteristics and how it is interconnected to digital transformation. Lastly, we present the importance of green digitalization, the essen-

tial key in supporting energy transition in all industries, serving a sustainable solution for our economy, society, and our future. This approach could be summarized in Figure 1. This paper does not aim to analyze digital transformation or sustainability in detail, but rather the output of these processes and principles (the EverythingTech concept and GreenTech solutions) as well as their nexus.

Research Methodology

The process of conducting a literature review varies between the underlying approach and its goals (Booth et al., 2016; Wong et al., 2013), however, as Snyder (2019) points out, regardless of the chosen method, four main steps should be taken to fulfill the aim of a robust literature review process (Figure 2).



Source: own compilation based on Snyder (2019)

To identify relevant publications in this diversified topic, we conducted several systematic searches of literature databases such as Scopus, EBSCO, and ScienceDirect, as well as using the web search engine Google Scholar which forms an immense database due to its public form and contains many studies not only from indexed journals. Documents from relevant institutes such as statistical institutes, research and consulting firms were also included. Research tools encompassed horizon scanning of case studies and company reports as well as collecting available statistics. We did not define a start date, and the relevant language was set to either English or Hungarian. For each subtopic, we used partly different keywords (“Digital transformation”, “EverythingTech”, “FinTech”, “GreenTech”, and “Green digital*”) and their Hungarian equivalents. When we filtered down the results, we also used combined search techniques (“AND”) as well as predetermined focus areas (such as industry names in terms of the EverythingTech effect). Those publications were selected and incorporated into our paper which contributed to the broader understanding of each subtopic and not limited only to a specific aspect of the given subject. Therefore, literature exploring cause-and-effect relationships and discourse analyses formed the focus.

Our explorative research questions were set out as follows:

1. What are the practical manifestations of digital transformation among various industries?

2. Why is green technology playing an increasingly important role in sustainability goals, and what is the outlook of the segment?
3. How can digitalization facilitate green growth?

More than 60 research papers and studies were finally selected to support our work in answering research questions.

„EverythingTech” – the impact of a widespread technological development

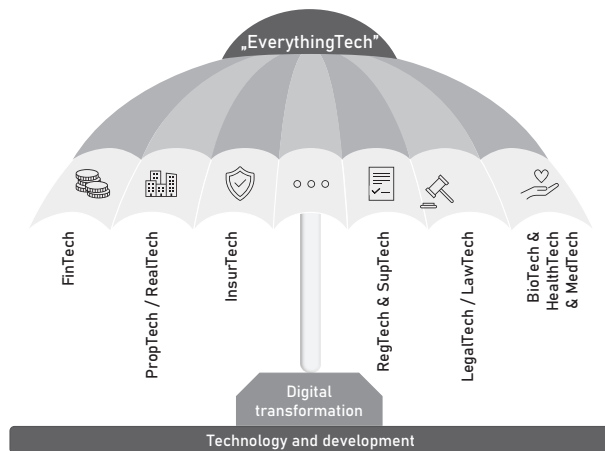
Digital transformation is based on continuous technological innovation, and therefore it is a never-ending process since in an ideal economic and social environment, there is no strict limit to technological development over time (Kraus et al., 2021). We are continuously moving further away on a smaller or larger scale from the leading technologies of the past while adapting new tools and technologies like mobile applications, automated manufacturing robots, artificial intelligence (AI) – such as VR technology, self-driving cars, automated decision-making, chatbots and digital assistants –, the Internet of Things (IoT) (e.g. smart home systems, wireless connectivity, biometric security access control) or cloud technology (e.g. SaaS services, virtual hosting) can support businesses taking a significant step towards their digital transformation.

Based on these and other innovative technologies, a transition has taken place in recent decades which is still in progress basically in all economic sectors. This is namely distinguishing traditional sectoral operating models from those which are continuously transformed by advanced technologies (Verhoef et al., 2021). This recognition of the latter indicates that the relevant business adds the term “tech” to the abbreviated name of its sector/field where it operates to demonstrate its active participation in the digital transformation (e.g. from a healthcare company to a “HealthTech” firm). From a certain point of view, it is a communication tool for social and economic players that the given organization is adopting some kind of digital transformation, and that by exploiting technological innovations it will theoretically be able to operate more economically, efficiently, and sustainably than its competitors (Beaumont, 2020). However, Beaumont also noted that there is – so far – no universally accepted measure of the indicator of how ‘digital’ a business model is. According to Hanelt et al. (2021), adopting digital technology solutions implies a move to a malleable organization model, where the impact varies on the level of acknowledgment and implementation. The digital maturity model tries to assess the stages of digital transformation impacting a given organization, how it reacts to digitalization purposes, and integrates the technology to achieve its goals and to respond to the digital competitive environment (Bumann & Peter, 2019; Haryanti et al., 2023; Ochoa-Urrego & Peña-Reyes, 2021). Haryanti et al. (2023) also compared dozens of existing maturity models to assess key inter-related dimensions for supporting the success of digital transformation, which could be served as one maturity measurement framework.

Figure 3 shows the most representative sectors in the digital transformation, without claiming completeness. These “end products” of digital transformation are also collectively referred to as “EverythingTech”.

Figure 3

The EverythingTech phenomenon in various industries



Source: own compilation

The pioneer of this trend is FinTech, which is short for Financial Technology, a broad term that encompasses the creation, development and delivery of financial products and services to customers based on innovative technologies and digital solutions (Das, 2019; Schueffel, 2017). Suryono et al. (2020) and Barroso & Laborda (2022) classified the current challenges, trends, and regulations of FinTech based on their systematic literature review, mapping all relevant articles, while Siddiqui & Rivera (2022) gathered mainly the attributes, components, and benefits of FinTech in a similar manner. FinTech is used for many things these days at the intersection of finance and technology, which pushes the boundaries of the definition itself. The basis for the development of FinTech was essentially the emergence of the internet, and as the infrastructures (servers and networks) were continuously built, the available technology expanded (aforementioned AI, cloud, blockchain, big data, cybersecurity) and as financial service providers recognized and started to adopt various combinations of FinTech innovations, the number of FinTech solutions (e.g. mobile payments, digital wallets, community finance and trading platforms, robo-advisors, etc.) also increased (Pintér & Bagó, 2020). These solutions can achieve similar goals, but in different ways: to make the financial sector safer, faster, and more efficient, while meeting the needs of a new generation of consumers. With the emergence of FinTech, businesses have easier access to funds and other financial services, while cloud-based platforms and customer relationship management services help them to run their day-to-day business efficiently (Scardovi, 2017). Notwithstanding, these financial solutions are not only important for the corporate sector but also for the consumer society.

Specifically, those who were born in the 2000s – the so-called “Generation Z” –, practically were raised in the world of digital technologies, a much higher proportion can be observed who use average Fintech solutions than those, who are in an older generation (Pintér et al., 2021).

Many FinTech studies (Arha & Jufri, 2020; Jutla & Sundararajan, 2016; Lee & Shin, 2018; Varga, 2017) explored the FinTech value drivers, ecosystem, and its elements, while Csepy & Aranyossy (2019) were focusing on the customer value creation power in the financial services industry. Although Phat Pham et al. (2021) categorized FinTech as “bank FinTech” (traditional financial institutions utilizing financial technologies) and as “FinTech-outside” (non-financial institutes using technology to provide financial services) – which viewpoint and sector-specific analysis also assessed by other authors (Gyüre, 2020; Horváth, 2019, 2020; Kerényi & Molnár, 2017) –, it can be concluded that the definition of FinTech is very versatile and can be approached from many sides. Another relevant angle is the importance of FinTech solutions in the field of green finance (MNB, 2022; Horvath, 2022), which can contribute to the aim of green financing and broadly, to GreenTech solutions – supporting green objectives and investments.

Overall, FinTech solutions have revolutionized many different markets, most notably the banking, retail, and insurance sectors. Yet the digital transformation and underlying hardware and software assets also impacted various other main industries by replacing traditional business models, such as the real estate (“PropTech”), education (“EdTech”), or healthcare (“MedTech”) segments among others (Table 1).

This overview leads to the conclusion that while different technological solutions are implemented and further developed in each sector and industry under the EverythingTech concept, they are all based on the same foundations and serve similar aims, while each aspect (regulation, customer centricity, accessibility, etc.) must meet sector-specific requirements (Beaumont, 2020). As a result, some characteristics are the same in all cases, regardless of the sector classification:

- customer / consumer-centric approach,
- cost minimalization and revenue maximization,
- complex, value-added service ‘bundle’ delivery,
- innovative solutions to replace traditional business models,
- enhances big-data analyses based on huge databases,
- serves the needs of high levels of availability, flexibility, and customization.

However, not all technological developments are related to a specific segment of an industry. There are comprehensive solutions, which have the same goals among all “EverythingTech areas”, regardless of the impacted circle of society or businesses: to achieve a green and sustainable way of living and operating – and that relates to the importance of adopting GreenTech solutions in all terms.

Table 1

**Examples of EverythingTech solutions
by selected sectors**

Term	Sector / Segment	Short description and examples
PropTech (Property + Technology)	Real estate segment	PropTech at its heart comprehensively encompasses real estate software solutions for residential and commercial purposes. The digital transformation has impacted all parts of its value chain and phases of the asset lifecycle, such as portfolio management, real estate market analytics, real estate brokerage platforms, or real estate design, construction, and management software (e.g. BIM, CAD), including virtual and augmented reality-based visual world displays, as well as the use of smart home applications and other IoT tools (Maududy & Gamal, 2019; Siniak et al., 2020).
InsurTech (Insurance + Technology)	Insurance sector	InsurTech is often considered a branch of FinTech. In the insurance market, innovations through new technologies can affect both insurance practices and the regulatory environment. As per the former, technological achievements in risk analysis and assessment, as well as more efficient and comprehensive data analysis contribute to the combination of services that could make potential consumers more accessible, while customizable insurance packages can provide a wider range of coverage for their assets. Furthermore, the role of “big-data” analysis, virtual data warehouses and agents, and chat-bots are prominent in this segment (OECD, 2017; VanderLinden et al., 2018).
MedTech (Medical + Technology)	Healthcare sector	Thanks to continuous innovations in healthcare (robot technology, modern diagnostic tools, digital data systems, etc.), more and more effective solutions are available at all stages of patient care and health preservation, starting from disease prevention (health assessment tools, modern vaccines) to diagnosis and monitoring (high-tech technical devices, such as CT and MR machines) to more effective treatments and more precise surgical interventions provided by devices equipped with artificial intelligence (EY, 2019; MedTech Europe, 2020).
LegalTech (Legal + Technology)	Legal segment	At first, the digital transformation affecting the legal sector meant only the digitization and automation of legal administrative processes, but over time, new solutions also helped the evaluation and review of certain legal cases and contracts (e.g. smart contracts, predictive artificial intelligence), which could speed up, increase efficient and simpler the legal services, while significant cost reductions can also be realized (Salmerón-Manzano, 2021).
EdTech (Education + Technology)	Educational segment	Digital transformation has also transformed the education system, from educational methodology to the learning and examination processes, which affects all actors in the field (parents, teachers, and students) (Moro et al., 2023). The accessibility of technology (e.g. laptops for all students, free mobile internet network, modern wall boards), digital libraries and databases, computer-driven learning (educational platforms, skills development programs), distance teaching, and online examinations have all been the result of technological innovation and social adaptation (Weller, 2018).
RetailTech (Retail + Technology)	Retail segment	From a consumer point of view, the commercial sector has been one of the most visibly affected by digital transformation. Whereas previously only physical stores existed, traditional retailers have gradually strengthened their online presence as technology has evolved, to the point that there are now companies whose product range is only available through a virtual store (webshop). This kind of digital transformation has two main aspects (which are valid for other EverythingTech segments as well): cost reduction and revenue enhancement solutions, focusing on the potential customer and its experience (Beaumont, 2020; Valdez Cervantes & Franco, 2020). At the same time, (Linzbach et al., 2019) argue that the great challenge for the retail sector will be to find the right balance between the traditional type of retail system and the adaptation of new technologies, while the focus will always be on meeting the needs of customers.
FoodTech (Food + Technology)	Food industry	The massive population growth of the past century, as well as the changing shopping and consumption habits, mean continuous challenges to the food industry. Concerning food production to be able to keep up with the population explosion and to ensure the security of supply, as well as various preservatives, sugars, plastics, and chemicals in production, preservation, and during packaging to take a back seat, not to mention the need for more efficient waste management, continuous technological innovations are required (Valoppi et al., 2021). Modern food technology and digital solutions seek to solve some of these problems. The scope of FoodTech, therefore, includes practically all technologies and processes that improve food production, distribution and supply (supply-side), while influencing people’s consumption habits (demand-side) (Renda, 2019).

Source: own compilation

GreenTech – Aspect of technological developments in a green context

Sustainability is a term currently much in vogue, however it is conceptually very complex and multidimensional in that there are multiple ways to live sustainably and “green”. Using sustainable methods to protect the environment, natural resources, biodiversity, and habitats is known as “becoming green” as a way of life.

According to Purvis et al. (2019), it is widely accepted that society, environment, and economy are the three main pillars of sustainability, which interact with each other on different levels. As our planet’s population is continually expanding – already exceeded 8 billion people in 2023 according to the World Population Clock –, the economy must keep up with the increasing demand from society, while the economic system also influences our social structure, thus the two dimensions have a mutual

connection. However, that's not the direct case with the environment pillar. The environment can't meet demands from the other two pillars in isolation, thereby inferring an overall responsibility for society to adopt greener lifestyles (Montt et al., 2018).

How can this be achieved or at least how can our way of living and doing the business move in that direction? The solution is bilateral as both demand-side and supply-side adjustments are needed. Demand-side influence relates to how we use the energy system and appliances every day, questioning whether we properly energy efficient and savers (regardless of focusing on how we live at home or use our vehicle) as well as having self-awareness regarding our energy consumption is provided from cleaner and renewable production – which is not that easy question when on the other hand, our usual well-being could be at risk at a short-term (Creutzig et al., 2022). It is also important to acknowledge those businesses which declare a responsibility for achieving a neutral carbon impact via their operating models. This latter aspect leads to the fact that as the public's interests in the social, ethical, and environmental impact of business activities increase, companies are taking on more responsibility (Khan et al., 2021; Nave & Ferreira, 2019).

As a result – and turning the coin to the supply side of the subject, focusing on the micro-environment –, nowadays many businesses make their sustainable development efforts and fulfillment of related legal obligations mandatorily publicly available, or even voluntarily to raise society's awareness of it (Zhang et al., 2022). It can also be a matter of prestige for companies to move in a greener direction so that their products, processes, and investment decisions serve environmental, sustainability, and social goals at the same time (utilizing green marketing and impact investing) (Durmaz & Yaşar, 2016). These goals are summarized in their environmental, social, and governance (ESG) guidelines and corporate social responsibility (CSR) (Grim & Berkowitz, 2020).

At a macro level, decisions of authorities and legal institutes – both in regional and national aspects, for example, EU directives and packages or Hungarian's National Energy Strategy 2030 – oblige companies to comply with the requirements of lowering the greenhouse gas emissions of their operations, increasing the usage of renewable energy sources at sites and reducing the level of waste production (Ministry of National Development, 2012). Altogether, these aims can mostly be achieved if companies are adopting greener technologies through their full value chain, which leads to the importance of the transition to GreenTech solutions.

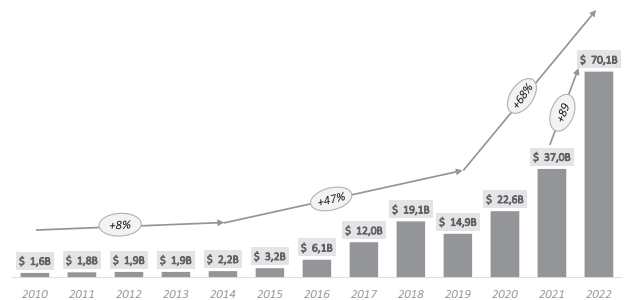
GreenTech (also known as “CleanTech”) refers to any manufacturing production technology that can be regarded as environmentally friendly or sustainable, either in its production process or in its finished product (Hoff, 2012; Qamar et al., 2020). According to Christensen et al. (2011), green technologies are those that use fewer resources to create value than conventional alternatives, while Marra et al. (2017) suggest that the concept also relates to lower air pollution emissions as well as the production of en-

ergy decisively from sustainable, renewable sources. The term GreenTech is also known as EnvironmentalTech, CleanTech, or ClimateTech – however, this latter one relates to green technology solutions focusing on solving the climate crisis via adopting innovations used in reducing greenhouse gas emissions in any industry (PwC, 2022).

With the goals of assuring sustainability, protecting the environment, healing environmental harm, and conserving the Earth's natural resources, green technology solutions span a wide spectrum of scientific studies, such as energy, atmospheric science, agriculture, and hydrology (Hoff, 2012). Examples of real-world applications are low-carbon technologies, fuel cells, LED lighting, passive houses, electric vehicles, smart meters, and smart grids as well as most of the available digital solutions.

Emergence of the sector is visible from the volume and amount of investment and acquisitions, project finance and public grants, especially since 2020 (Figure 4.). These funding were mostly related to scalable GreenTech startups and clean energy technologies addressing global climate change. According to the ClimateTech report of HolonIQ, 2022 was an outstanding year of investment growth in absolute terms (+\$33,1 billion), but also proportionally (+89%) compared to 2021. Most of this was related to storage capacity (\$18,4 billion), electromobility (\$11,4 billion), and GreenTech solutions in the AgroTech segment (\$9,5 billion). As per the regional view, most of the investments occurred in the USA in the last years, but China and Europe follow closely (HolonIQ, 2023).

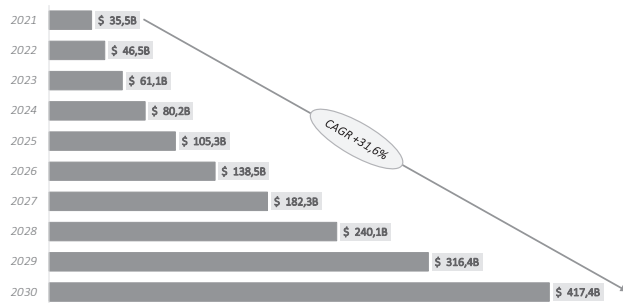
Figure 4
Global ClimateTech Venture Capital Funding,
2010–2022 (in USD billion)



Source: own compilation based on HolonIQ (2023)

According to another worldwide market research and consulting organization, Precedence Research, several factors such as growing awareness regarding the environment, global warming concerns, policymaking with a green focus, lower cost of production, etc. are boosting expansion of the global green technology and sustainability market (Precedence Research, 2022). Although based on their database they calculated a lower market size in value for 2022 compared to the previously mentioned research institute, and used a different methodological approach, the organization expects the GreenTech market to exceed \$400 billion market size by 2030 (Figure 5). This would result in a compound annual growth rate (CAGR) of 31,6% between 2021 and 2030.

Figure 5
GreenTech and sustainability market size,
2021–2030 (in USD billion)



Source: own compilation based on Precedence Research (2022)

Precedent Research also notes that the largest market currently in North America, however, Europe shall have the fastest growing rate of all territories, out of which the UK shall dominate the market. They also highlight the importance of the AgroTech market as well as the green buildings segment, which contributed the most in the recent year to the general market growth.

Both research institutes emphasize that the market for green technology and sustainability is expected to develop as a result of favorable government policies and regulations. Noh (2018) and Xia et al. (2021) also stated that besides the promotion of internal objectives that create higher corporate value and thus investment potential due to growing social and investor awareness, green technology transition in the corporate sphere can be facilitated by an appropriate external regulatory environment.

The EU's Renewable Energy Directive (RED), adopted in April 2009, provides a legal framework for the development of renewable energy in all EU sectors, setting out common principles and rules to remove barriers to entry, encourage investment and reduce the cost of producing renewable energy technologies. The Directive has been revised several times in terms of the targets to be achieved, with the European Commission increasing the target for the share of renewable energy in gross final energy consumption from 32% in current plans to 38-40% in 2030 (European Parliament, 2022).

The Paris Agreement, adopted in December 2015 and formally ratified in November 2016, was a milestone in climate policy – a treaty involving 194 countries that have put international cooperation on climate change on a new footing. The parties set concrete, quantitative targets, with universal commitments for developed and developing countries alike: the ultimate goal is to limit the global average annual temperature increase to no more than 2°C above pre-industrial levels and to limit global mean warming to 1.5°C in the optimum case. In addition, each country is required to submit so-called nationally determined contributions as action plans every five years, outlining its emission reduction status, which shall be kept under review (United Nations Climate Change, n.d.). Furthermore, the European Green Deal (EGD), proposed in December 2019, aims to make Europe the first climate-neutral con-

tinent by 2050 by developing a roadmap to a sustainable economic model. It is therefore in effect a commitment by the EU to meet the goals of the Paris Agreement, notably by making the 27-nation European Union carbon neutral in less than 30 years (European Commission, n.d.). This is an essential moment for all the actors to change their business models and practices in accordance with the obligations and aims, which also resulted in the increase of various available funding and investment potential from 2016 and 2019 again – as presented in Figure 4, serving as partly an explanation to the higher growth rates.

Ultimately, without GreenTech assets and services, these impressive goals could not be achieved, and digital solutions are part of the GreenTech elements. Green digitalization provides great opportunities in improving sustainability in various ways, however, sometimes it comes with a price, for which a general solution has yet to be found. The next chapter is focusing on the green and digital twin transition.

Green digitalization – digital solutions for a greener world

Green digitalization is assuming an increasing focus of research due to its growing importance in combatting negative aspects of climate change. Besides known management consulting firms dealing with the subject (Deloitte, 2019; EY, 2020; PwC, 2022), a decent number of researchers are assessing the digital sustainability phenomenon in different aspects. Wang et al. (2023) found a positive relationship between enterprise digitalization and green innovation, while Li et al. (2023) concluded that digital financial inclusion positively correlates to green innovations. Berger et al. (2021), George et al. (2021), Gregori & Holzmann (2020), and Di Vaio et al. (2020) centered the entrepreneurship, business models, and ecosystems in this matter, while Saberi et al. (2019) and Adams et al. (2018) examined the role of blockchain solutions in value creation, Camaréna (2020) and Frank (2021) measured the importance of AI in this manner, and Shaharudin et al. (2019) focused on the low carbon supply chain management in this aspect. Brenner & Hartl (2021) addressed the interrelationship between digitalization and three dimensions of sustainability – ecological, economic, and social.

Digital technologies may present a solution as well as the risk of adopting greener production methods. Dematerialization of physical operations and the use of digital assets such as cloud, IoT, blockchain, AI, and big data, environmental objectives could be rendered achievable by saving costs and time. Digital solutions are essential for understanding our environment and monitoring the impact we have on it since with technology, we can analyze and simulate real-world events, such as optimizing resource use, waste management, and emissions, utilizing smart meters and appliances, or operating a virtual power plant within an energy community (Muench et al., 2022).

Green digitalization has been explored and examined in various areas: sustainability in small and medium-sized

enterprises (Isensee et al., 2020), IoT-based smart systems (Alam et al., 2017), circular economy (Pagoropoulos et al., 2017) or quality management aspects (Carnerud et al., 2020). The extent of green FinTech solutions (e.g. smart contracts, digital payments, crowdfunding platforms) and green financing (e.g. green bonds and funds, energy efficiency loans, and grants) also stimulate and contribute to the matter. However, on the other hand, digital tools use electricity (“rebound effect” of digital hunger), and many digital technologies are resource-intensive (especially blockchain networks via mining) and produce electronic waste as well (EY, 2020).

Green and digital transformation should be supported with proactive and integrated management to be successful. Due to its enormous economic potential, the private sector will primarily lead the shift to digital technology. State and civil society involvement will be required to maximize its positive effects on environmental sustainability and minimize its negative effects.

The importance of green digitalization was recognized and reflected in European Commission’s (EC) recently adopted 2022 Strategic Foresight Report which draws attention to the green and digital transition in a new geopolitical environment. The aim is to accelerate dual transition to green and digital dimensions, particularly in areas where negative contributions to the climate crisis are the highest, namely in energy, transport, industry, buildings, and agriculture. The report discusses various digital technologies which could support the case, outlined as follows (European Commission, 2022):

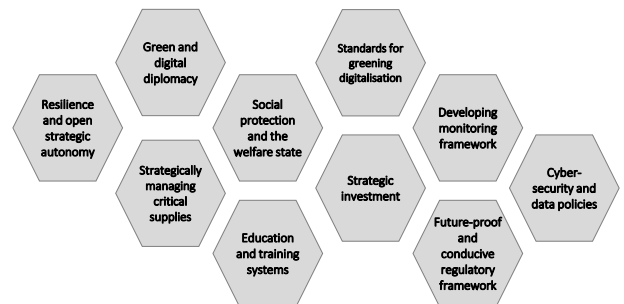
- Within the energy sector, upgrading smart grid systems with new sensors, satellite data and blockchain to facilitate the management of weather-dependent power plants. Also, the energy-as-a-service concept could transform the usual supplier and consumer business model into a more favorable and efficient, two-sided cooperation.
- In the transportation sector, a major shift towards sustainability is related to the new generation of batteries and the electrification of various modes of transport, from public transportation to commercial aircraft. Furthermore, artificial intelligence and IoT solutions could lead to data-driven smart mobility, even to fully self-driving vehicles.
- Another very important aspect is improving the energy efficiency of residential and commercial buildings. According to the statistics, 40% of total energy consumption in the EU relates to buildings and infrastructure. The solution is twofold: to build new and efficient smart homes and real estate in parallel with proper retrofitting of existing, older ones. By applying smart meters and digital logbooks to monitor and optimize consumption and system usage as well as integrating solar panels, HVAC heat-pumps, and vehicle-to-grid solutions, an average consumer can effectively contribute to our climate goals meanwhile can have an interest in the smart grid system and energy market if acting as a small household/commercial power plant.

- Finally, the report discusses the importance of smarter and greener agriculture. As mentioned in the EverythingTech section, various smart sensors and data-driven selection of alternative resources to eliminate the amount of water, fertilizers, and other artificial materials could be a benefit to both human and animal environments. Besides smart farming, limiting food waste and securing biodiversity are also long-term goals of the segment.

To achieve improvements in these and other segments as well, EC urges the adoption of appropriate policies with reconsidered solutions and key steps. Figure 6 sets out the 10 key areas for action to effectively exploit the synergies and ensure coherence between the climate and digital objectives. Thereupon, the EU will strengthen its resilience and aims to be better prepared for unexpected global and regional challenges.

Figure 6

Key areas for action to support green digitalization



Source: adopted from European Commission (2022)

The European Commission has as such aptly highlighted the importance and necessity of using GreenTech and sustainable digital solutions in various areas to achieve a successful green transition to a carbon-neutral economy. Recent events and the current geopolitical instability confirm the need not only to accelerate the green and digital transition but also to increase national strategic interest by reducing dependencies in supply chains and securing access to critical raw materials.

Conclusion

Immense economic pressure has emerged in terms of seizing the opportunities offered by digitalization to remain competitive. Sustainability in turn has instigated public pressure for businesses to take stronger actions in this regard, hence the intersection of sustainability and digitalization has particularly key importance.

However, digital transformation presents a conundrum consisting of opportunities and deleterious effects. On one hand, it increases our energy consumption through the high digital hunger it creates, but it can also be the solution if it is properly managed in a green way, transforming not just physical to virtual, but business models and processes as well as societies’ way of being, which contributes to the

ultimate goal, to progress sustainable development. It has a wide range of tools that can foster green innovations, optimize resources, maximize energy efficiency, and track sustainability progress.

Digitalization is as such key to leading to energy transition in different industries, while in a broader sense, the tech industry has the advantage to drive society's transition to a green and digital future. GreenTech is a crucial component of the future because by implementing such innovations businesses and individuals can contribute to alleviating adverse climatic change and providing humanity with the chance to build a sustainable planet for future generations.

Our study emphasizes a strong understanding that GreenTech can optimize the basis of any industry, but the support of regional and national legal institutes is essential to provide an adequate framework for continuous transformation. Crucially, the regulatory environment is treating the green and digital transition in a prominently favorable manner. As a result, acceleration of the expansion of digital transformation and the role of GreenTech solutions within it should assume much greater prominence in the near future.

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

A LEGGYAKORIBB, AKTUALIZÁLANDÓ HUMANERŐFORRÁS-KOMPETENCIAMODELLEK ELEMZÉSE

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 világvárvány 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 evolutions 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 ($r=0.239$, $p\leq 0.05$ for capability builder and $r=0.247$, $p\leq 0.05$ 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's 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 R^2 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 ($\beta = .302, p < .01$) 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.

Table 4

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

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.	F	Sig.	R ²
	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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