The Manager as an Organisation Agent during the Fourth Industrial Revolution

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Abstract:

Purpose: This paper, which was inspired by challenges faced by organisations transforming towards the Fourth Industrial Revolution (FIR), explores the role of managers as organisation agents in this process.
Design/Methodology/Approach: A qualitative method and an interpretative paradigm are used to analyse the outcomes of semi-structured individual in-depth interviews conducted with a purposively assembled sample of 12 managers.
Findings: The analysis determined three main thematic threads describing the roles and attributes that the FIR requires of managers. The first thematic thread concerned the impact of the FIR on the functioning of organisations and their employees. The following roles were further identified: talent manager, development initiator, change visionary, and transparent leader. With regard to attributes, strategic thinking, flexibility, and responsiveness to change, creativity and innovation, an ability to cooperate and inspiringly motivate employees, agility in seizing opportunities created by the FIR and an ability to cope with its challenges were indicated as essential.
Originality/Value: Based on the study's findings, a preliminary model of the FIR as the driver of new roles for managers-agents is proposed. The paper makes an important theoretical and practical contribution to the understanding of the essential role of managers-agents during the FIR. It has been prepared in response to the paucity of studies on this subject. The findings of the study are hoped to help managers to better understand their role during the FIR and to adjust to it.

Keywords: Fourth industrial revolution, organizational behaviour, manager as an organisation agent, managers' roles and attributes.

JEL Codes: M120, M510, G410.

Paper type: Research article.

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1. Introduction

The Fourth Industrial Revolution (FIR)[2] which is now present in most countries requires organisations that want to gain a competitive advantage to adapt their mode of operation to the changing environment. Manufacturing environments in developed countries are already changing under the influence of the FIR, with the rest of the world being expected to follow suit in the next few years along with digital and technological advances.

The FIR also exerts influence on human capital, global trade, and networks (Götz and Gracel, 2017), as well as on the content of managers' and employees' work (Kazançoğlu and Ozkan-Özen, 2018). Continuing technological progress, the implementation of innovations, the information revolution, and the emergence of breakthrough technologies make organisations readjust their management styles. By redefining existing values and working methods, the FIR forces executives around the world to make their organisations and employees ready for new challenges. Workplaces change with the widening use of digital technology, which provides managers with new ways of communication with other managers, employees, and the organisation (Jesuthasan, 2017).

The majority of employees in developed and developing countries alike watch the technological aspects of the FIR with anxiety, perceiving them as a threat to their jobs and livelihoods (PARP). According to a survey by the World Economic Forum (WEF), although machines or artificial intelligence (AI) are not believed to be able to fully replace human labour, automation and robotisation are already having a significant impact on the labour market.

However, while making many skills obsolete and increasing the risk of job loss, the FIR also stimulates the creation of new jobs (Naudé, 2019; Rana and Sharma, 2019), which means that managers retain their importance as a factor capable of keeping their organisations and employees abreast of recent developments in their industries (Ślusarczyk, 2018). Given that, it seems necessary to investigate how they can change the way employees see operations in their workplace, how they share new information with them, and how they use innovative approaches to cope with the challenges of the FIR.

As employees interact with managers on a daily basis, they tend to see them as the representatives (agents) of their organisations (Tekleab and Taylor, 2003; Vidyarthi *et al.,* 2014; Karagonlar *et al.,* 2016; Deng *et al.,* 2018). By overseeing, assigning tasks, monitoring performance, and providing feedback, managers help employees fulfil their roles and tasks and to relate to the organisation, and influence employment relations. Naturally, employees' pre-employment experiences, recruitment practices, onboarding opportunities, and training also have a role in how

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[2]*Also the Industrial Revolution 4.0.*

they see workplace relationships, but it is direct supervision of the manager-agent that gives them a specific shape. The organisation's expectations regarding an employee's contribution and the support and rewards it offers in return are communicated in the course of interactions between employees and managers as the representatives of the organisation (Ashford *et al.,* 2018). Managers acting in the capacity of organisation agents are primarily responsible for helping employees to adapt to technological tools and innovative technologies that come with the FIR (Yesuthasan, 2017).

Understanding how the FIR impacts employees, their jobs, as well as on the roles and functions of managers as organisation agents is necessary for organisations to seamlessly undergo the technological transformation and appropriately adjust their practices (primarily by developing competencies 4.0 or hiring highly specialist workers) to the challenges of the FIR. This study was undertaken to determine the role(s) and attributes of managers as organisation agents in organisations implementing the FIR[3].

This objective emerged from three important gaps in the literature. First, calls from the international literature for a more expansive understanding of the manager-agent role in the FIR context (Deng *et al.,* 2018; De Ruyter *et al.,* 2019). Second, given the rapid changes occurring in the Polish context, there is also a need for continued research on the importance of the manager's role as an agent of the organisation in navigating the FIR (Rogozińska-Pawełczyk, 2021). Finally, from a methodological point of view, drawing on international and domestic literature, the role of managers and their attributes were mostly explored using quantitative research.

This paper is structured as follows. First, the managers as organization agents in changing's workplaces as one, of the variables under-study is given attention. Second, the emphasis is also given on the Fourth Industrial Revolution context and conceptualization and definition manager-agents' attributions for FIR implementation. Third, the theoretical and empirical literature is presented, bearing in mind the variables under study. Subsequently, the research methodology and design are presented. A discussion of the findings of the research follows thereafter given the extant literature. The paper concludes by presenting the implications of the research findings to both theory and practice given the context in which the study was located.

2. Literature Review

The FIR is based on digitisation, full automatisation, robotisation, and comprehensive communication, with which the transformation of enterprises' organisational structure begins (Hermann, Pentek, and Otto, 2015). The FIR is a new concept of industrial development that puts together IT, management, and

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[3]*Manager-agent 4.0.*

engineering solutions to provide businesses and economies with new opportunities. A decision by an organisation to become part of the FIR involves manifold changes to all functional areas and, consequently, dilemmas for managers responsible for adjusting the current management formula to the new requirements (Schaefer, 2014). It also makes it necessary for them to rethink their functions and roles in the FIR environment.

2.1 The Importance of Managers as Organization Agents in Today's Workplaces

There is a common agreement among researchers that relations between employees and their employers do not develop spontaneously (Ashford and Rogers, 2012) but require some advantageous circumstances to emerge. The process of their emergence is called anthropomorphism and consists in an employee personifying the organisation and giving it human-like traits. The employees' tendency to perceive organization agents' actions and responses as those coming from the organization itself was first noted by Levinson *et al.* (1962). The authors of studies on employment relations have observed that managers whose actions are aligned with the interests of the organisation (Coyle-Shapiro and Shore, 2007; Wellin, 2016) are consequently believed to embody the organisation's expectations and promises.

According to organizational theory (Tesfatsion and Ludd, 2006), organisation agents who oversee employees' compliance with the provisions of their contracts should seek to be consistent in how they shape and maintain relations with them (Lee and Taylor, 2014). It is, however, unlikely that all managers-agents will interpret organisational strategy and expectations in the same way, because they naturally differ from each other in behaviours and viewpoints on how the organisation should work (Coyle-Shapiro and Shore 2007). This causes that also employees have their individual perceptions of their organisation.

Managers are responsible for protecting the interests of the organisation's stakeholders' (Bakuwa, 2013), but as its agents, they should also emphatically listen to employees and take account of their needs (Gilbert *et al.,* 2013; Obushenkova *et al.,* 2019). This role is apparently very important also in the high-technology FIR environment, which involves job cuts, deskilling, job insecurity, and increased inequality (De Ruyter *et al.,* 2019) that stoke employees' anxiety and uncertainty over their jobs (De Ruiter *et al.,* 2016). Managers-agents can ease these concerns by engaging with employees, setting their personal career goals, and formulating action plans for achieving them (Lee and Taylor 2014; Jabagi *et al.,* 2019).

According to Tekleab and Taylor (2003), there are three main channels through which managers-agents can influence the development of employee relations and foster them. These are the communication of the organisation's expectations, direct evaluation of employee performance, and reacting to employee behaviours. Also important are their roles as strategic partners and leaders (Randmann, 2013).

Being a strategic partner involves the identification of the key areas of concern relating to personnel and technology (McIver *et al.,* 2018). The digital age requires the managers-agents to assess the current state of the organisation, to help employees overcome their resistance to change, and make sure that they have adequate skills to cope with it (Kazançoğlu and Ozkan-Özen, 2018; De Ruyter *et al.,* 2019).

The role of a leader is the most exciting because the quality of leadership in the organisation significantly influences employee motivation, commitment, and aptitudes (Welch and Hodge, 2018). The successful implementation of organisational, cultural or social changes largely depends on managers' creativity in overcoming the existing boundaries and on cooperation between the executive and medium-levels of management in the organisation. Managers should, therefore, harness the collaborative intelligence of their organisations and create agile teams to deal with constant challenges and disruptions (Paresh, 2019).

2.2 The Attributes of Managers as Organisation Agents during the Fourth Industrial Revolution

Managers-agents 4.0 are expected to have technical, managerial, and social competencies, also called attributes. The technical attributes include knowledge, skills and abilities necessary to complete tasks (Kohl and Swartz, 2019). The category of managerial attributes contains general problem-solving and decision-making skills and abilities (Kola *et al.,* 2019). The social attributes help maintain interpersonal relations with other members of the organisation and require communication skills (Shaw and Varghese, 2018).

Having examined all three types of attributes, Oberer and Erkollar (2018) concluded that human capital management for the FIR needed a fast-paced, team-oriented, and collaborative approach, with a strong focus on creativity and innovation. Managers who build their creativity and innovation should also be able to develop critical capabilities of the organisation (Rana and Sharma, 2019). Because changes resulting from the FIR are immense (Jesuthasan, 2017), being a change champion – i.e., having the ability to drive organisational change and implement change processes closely following external changes – is a key attribute for managers-agents to possess.

In today's volatile, uncertain, complex, and ambiguous business environment (VUCA), managers have little influence on the organisation of work. The FIR also needs employees who are self-directing enough to act as their own leaders (Khatri, Kumar, and Pahwa, 2019). As a result, employer-employee relations are increasingly based on a new psychological contract (Rogozińska-Pawełczyk, 2020). In these circumstances, managers must become organisation agents who initiate actions and shape employment relations. The knowledge of how the FIR changes employees, the content of their work, and managers' functions is necessary to understand the role of

managers as organisation agents during the FIR. This paper seeks to determine the attributes they will need to fulfil this role.

3. Research Methodology

3.1 Research Approach

The study used a qualitative research method that according to many scholars (Nowell and Norris, 2017) is the most appropriate to answer many critical questions that remain open. The method allows the respondents to freely comment on the research problem under consideration, and so it provides better insight into complexity (Levitt *et al.,* 2018). Through this research approach, respondents were able to articulate and express themselves openly around the presented subject of interest (Marshall and Rossman, 2011).

The research problem in this study was the managers-agents' perception of the FRI influence on employees' experience of work. The data obtained with the qualitative method were analysed using an interpretative paradigm. The study is of an ontological type as it examines the roles of managers-agents during the FIR and seeks to determine what key attributes they need to manage employees effectively.

3.2 Research Sample

Non-probability sampling method approach relying on a using purposive sampling technique was used. Intentionally, here the focus is narrowed down to only those characteristics needed in the sample (Etikan, Musa, and Alkassim, 2015), i.e., managers as agents of organisations during transformation towards FIR. The following inclusion and exclusion criteria were used to select participants: (1) a respondent the respondent have been employed in organisations that are currently undergoing technological transformation and are adapting their practices accordingly (primarily through the development of 4.0 competencies or the hiring of highly specialised staff) to the challenges of the FIR; and (2) a participant have been classified as an manager-agent.

The study involved a survey of 12 middle-level and senior managers[4] selected from large and medium-sized Polish enterprises operating in industries such as administrative and support services, information and communication, financial and insurance activities, and industrial processing. The sample consisted of six men and six women at a mean age of 43 years, with an average work experience of almost 18 years. The participants' characteristics are presented in Table 1.

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[4]*The number of participants was selected following a recommendation that a qualitative survey group should have from 8 to 15 members (Hill et al., 2005).*

Table 1. *Characteristics of the study group participants (N=12)*

Respondent's number	Gender	Age	Work experience	Industry	Current position
1	Male	44	18	IT	Director of the Research and Development Department (R+D)
2	Male	38	13	Production	Director of the Innovation and Implementation Laboratory
3	Male	36	11	Finance	Bank Branch Director
4	Female	50	24	Production	Senior Executive
5	Female	31	6	IT	Manager
6	Female	58	33	Services	Senior Executive
7	Female	54	29	Services	Manager
8	Female	35	10	Services	Manager
9	Male	36	11	Production	Senior Executive
10	Male	38	12	Finance	Manager
11	Female	45	20	Finance	Manager
12	Female	52	27	Finance	Manager

Source: *Own study.*

3.3 Data Collection and Analysis

Twelve in-depth interviews (IDI) were conducted using the semi-structured interview method, which was selected to ensure the reliability of the outcomes. To secure the theoretical adequacy of the survey, open-ended questions concerning the FIR environment were included in interviews. Prior to the survey, the respondents were reached via email and phone to discuss the interviews' dates and other details. The interviews lasted from 55 to 100 minutes and were held in Poland in the second half of 2020.

Information recorded during the interviews was transcribed and subjected to a thematic analysis as described by Braun and Clark (2006). This type of analysis allows thematic threads relevant to the phenomenon under consideration to be identified, examined and described (Braun and Clarke, 2006). To ensure data reliability, integrity, and quality, Lincoln and Guba's (1985) criteria of credibility, transferability, reliability and confirmability were applied following the recommendations of many qualitative researchers (Shenton, 2003; Elo *et al.,* 2014). The qualitative data were subjected to vertical analysis and used to formulate conclusions.

Thematic analysis was used to analyse qualitative data by identifying and exploring common patterns within the data (Vaismoradi, Turunen, and Bondas, 2013). Six steps recommended by Braun, Clarke, Hayfield, and Terry (2019) were used to analyse the data through thematic analysis:

1. Familiarising yourself with the data - actively reading and re-reading the data to gain an overall understanding;
2. Generating initial codes - noting important aspects of the data;
3. Exploring thematic threads - identifying codes and forming codes into thematic threads;
4. Reviewing thematic threads —relating the thematic threads to codes and the entire dataset;
5. Defining and naming thematic threads and sub-threads - creating clear definitions and names for thematic threads and sub-threads;
6. Final development of qualitative research findings - analysing themes that relate to the initial research aim.

4. Findings

The thematic analysis identified three main thematic threads concerning the role of managers during the FIR. Brief descriptions of the threads and the number of participants indicating them are shown in Table 2.

Table 2. *Thematic threads and sub-threads identified from IDI interviews*

Thematic thread	Sub-thread	Response frequency
The FIR impact on the organisation and its employees	Implementation of new technologies	8
	New ways of working	7
	Automation and digitalisation of work	8
	Proactive understanding of the organisational environment	5
The attributes of a manager as an organisation agent	Strategic thinking	20
	Flexibility and responsiveness to change	10
	Creativity and innovation	12
	Cooperation	24
	Inspirational motivation	10
	Agility	18
Managers' role in navigating through the FIR	Talent manager	18
	Development initiator	12
	Change visionary	27
	Transparent leader	29

Source: *Own study.*

4.1 Thematic Thread 1: The impact of the FIR on the Organisation and its Employees

The first thematic thread concerned the impact of the FIR on the functioning of organisations and their employees. Within it, four major sub-threads were identified:

the implementation of new technologies, new ways of working, the automation and digitisation of work, and the proactive understanding of the organisational environment. The sub-threads are discussed individually below.

The implementation of new technologies, all respondents stated that their organisations used state-of-the-art technologies and IT systems to run operations. They indicated that "*robotic solutions were implemented in production processes to do tasks that required more precision*" and that "*a chatbot was used to help employees solve IT problems*" (R3). Participant 5 noticed that "*the more applications based on new technologies become available, the more opportunities to use them for work* ". The FIR brought system improvements such as "*digital tools for planning, processing, communication, payments, training and development*" (R6). According to respondent 12, "*technological innovation will become an opportunity for organisations to grow and develop*".

The new ways of working, many of the surveyed managers were aware that new ways of working such as flexitime and online work were needed as "*we cannot allow our employees to waste time commuting to work*" (R6). For Respondent 2, organisational culture and strategic goals were important for creating new approaches to performance: "*I think we need to fundamentally change the way we operate in our company because the strategy we created five years ago is outdated*". Another respondent (R1) added that: "(...) *the company's focus on emerging technologies changed its strategy so that it directly supported the organisational culture*".

The respondents realised, however, that the new ways of working had a downside too. They stated that "*we progressively improve the technological processes*" (R7), but "*interacting through technology with people who are constantly working with ... other virtual teams*" (R1) becomes "*less interactive*" (R2) and "*erodes commitment*" (R6). The gap between the traditional and new ways of working was viewed as likely to result in manager-employee relations characterised by "(...) *a shift from frustrations with people to frustrations with the technological system*" (R8).

Work automation and digitalisation confirming that "(...) *work has become digitalised*", the respondents pointed to the "*automation of work*" (R2) and the wide use of "*robots and even chatbots*" (R3). The benefits of task automation were described as adding up to a "*global (...) automated workspace*" (R10). Some respondents mentioned specific automated systems that were used in their organisations: "*now every document in the company can be signed electronically instead of doing this manually*" (R12), "*I have all information about my staff in the personnel application (...) I have direct access to the results of mid-term evaluations, job satisfaction surveys, and personnel data such as the number of vacation days used or absences from work*" (R6).

The proactive understanding of the organisational environment the respondents emphasised that managers must watch for new trends in their industries and follow them closely. Respondent 2 warned against "*sitting back and just looking at how the industry changes*" or fostering a "*culture of reactiveness*", advocating instead "*increased awareness' and "being proactive*" (R2). Respondent 5 noticed that the well-trodden ways of thinking and doing things could very soon become inadequate because of the pace of changes, concluding that "*we need to be proactive rather than reactive. We have to constantly identify gaps in the market and analyse them*" (R5).

The proactive understanding of the organisational environment was indicated to depend on "*cultural and social awareness in pursuing the role of an effective manager-agent 4.0*" (R4).

4.2 Thematic Thread 2: The Attributes of a Manager as an Organisation Agent

The second thematic thread contained attributes necessary for managers-agents to navigate through the FIR. In addition to the usual attributes of a manager such as responsibility, courage, entrepreneurship or passion, six other attributes were found by the respondents to be essential for a manager-agent 4.0.

Strategic thinking, according to the respondents, the basic attributes of a manager-agent 4.0 included "*strategic leadership*" (R6) and "*keeping abreast of industry changes and management trends*" (R8), as well as the ability "*to formulate long-term objectives and a vision for employees to follow*"(R6). A manager who navigates through the FIR and uses strategic thinking should engage in "*business partnerships*" (R1) and "*systemically analyse how different aspects or parts of the organisation will interact*" (R3).

Flexibility and responsiveness to change: in the respondents' opinion, the FIR made it necessary for managers to constantly respond to change. As a result, managers-agents 4.0 should "*naturally embrace change*" (R8) and be "*change agents*" for their subordinates (R2) and "*advise employees on how to choose a course of action best suiting their needs*" (R5), as well as show "*resilience and flexibility (...) to manage change in the right way*" (R9) and "*speed in reacting to changes that emerge as the organisation evolves towards the FIR*" (R10).

Creativity and innovation: the respondents stressed that managers-agents 4.0 needed skills such as "*creativity*" (R1; R2) "*creative thinking*" (R10), "*effective and innovative problem solving*" (R3), and "*critical thinking*" (R10; R11; R12). For Respondent 12, "*emotional intelligence*" in managing employees was also important. Cooperation: the study participants saw navigating through the FIR as requiring "*the ability to interact with people; in other words, the ability to manage relationships ...* [so to] *lead people through change 4.0*" (R5). Again, the need for managers-agents 4.0 to have "*emotional intelligence*" (R12) was highlighted because "*employees are*

different (...) and so are their expectations, which they are sometimes unwilling to reveal" (R6).

Respondent 10 stated that "*personal interaction is essential to maintain relationships with subordinates*" and for respondent 12 "*teamwork and ... coordinating activities together*" were important. As "*virtual spaces [and] technological tools such as MS Teams, or Zoom*" (P5) are increasingly used, "*the way managers interact with their subordinates may change significantly*" (R11).

Inspirational motivation four respondents believed that managers needed "*the ability to inspire confidence, motivation and a sense of purpose in their employees*" (R6), which they briefly described an "*inspirational motivation"* (R1). One respondent viewed "*manager-agent 4.0 as a role model and therefore as an inspirational person*" (R9). As managers navigating through the FIR were expected to raise employees' awareness of the organisation's mission and vision, they should "*give them the confidence to accept and commit themselves and others to that vision*" (R12) and be "*proactive in shaping ideas and exerting influence on the direction that the direction should follow*"(R11).

Agility. according to the respondents, agility allows managers-agents 4.0 "*to enable employees to adapt to incessant external and internal pressures and to make changes*" (R7). It is also necessary to respond to the ever-changing work environment: "*managers need to be agile and able to embrace and accept change*" (R9). Agility "*ensures that managers see any emerging change not as a burden, but as an opportunity for growth and innovation*" (R2). An agile manager was understood by the respondents as someone who "*understands employees and allows them to make decisions independently, to propose solutions, to develop, and to effectively implement change*" (R11), but also "*maintains a balance between tangible and intangible resources owned and used*" (R12).

4.3 Thematic Thread 3: The Managers-Agents' Role in Navigating Through the FIR

The third thematic thread concerned the role of a manager-agent 4.0 and contained four sub-threads presenting the manager as a talent manager, a development initiator, a change visionary, and a transparent leader.

A talent manager, the respondents believed that talent management in the FIR involved the use of "*new* [technologically enhanced] *education and training systems*" (R12) and "*a more precise utilisation of employees' skills and talents*" (R9). As "*employees will more often be able to do their work remotely*" (R7), managers-agents 4.0 should "*be more aware of how an individual's talents translate into know-how for the organisation*" (R8). Also emphasised was the need "*for more proactive leadership*" (R12) in talent management: "*Instead of reacting to lack of skills, outdated competencies or failures*" (R2), managers should "*proactively manage*

people [to] find out what skills are needed and ... start upgrading their skills now"
(R11).

A development initiator: the necessity to efficiently process huge amounts of data, to
be flexible, and to make rational decisions increasingly requires managers "*to adjust
their skills to the requirements of technological progress"* (R10) and "*to prepare for
the likely world of the future*" (R1). The need for managers to develop skills was
confirmed by one of the participants who "*was sent on a six-month AI upskilling
programme*" (R12) to develop "*skills that are currently in demand in the high tech
sector*" (R12).

The respondents also agreed that "*the manager's influence on employee development
is huge. Digital technology is now widely available, but employees' skills follow
closely behind*" (R1) and that employee development should be supported in the long
term. According to Respondent 2, managers-agents 4.0 are expected to "*analyse the
available potential and talent*" and "*forecast the skills that will prove necessary for
employees in the near future*", but they should also "*initiate the development of
employees' competencies to the level expected by the organisation*" (R4).

A change visionary, as well as deciding about how their organisation should change
in the next few years, managers-agents 4.0 must also respond to external challenges
as they arise, seize market opportunities, and confront threats. The awareness of this
caused the respondents to underscore the need to ensure "*compatibility between
organizational systems and culture*" (R10) and indicated that managers' influence on
employees "*relies heavily on their understanding of new ways of working*" (R7).

They also believed that as the role of managers-agents 4.0 "*is more consultative (...)
and shifts from a push management model to a pull model where employees are
managed based on their expectations*" (R2) they needed "*to be more proactive and
engage in employer-employee partnerships and be more strategic about how change
should be implemented*" (R7).

A transparent leader, transparent leadership requires that an employer and an
employee interact on equal terms and understand their roles and contribution to the
growth and development of the organisation. According to the respondents, "*The
changing world of work carries some risks for employers, as well as eroding
employee factors that managers have traditionally taken for granted*" (R8). Several
of them concluded that the main reasons for the lack of transparency among
managers were "*negligence in management*"(R6), "*fear or uncertainty about the
organisation's future*"(R3), or "*operating in an old-fashioned Theory X
culture*"(R1).

The role of a transparent leader was associated with "*trust and openness in
employment relations*"(R4) and "*the awareness that leadership must be based on an
objective evaluation of the relations*" (R2). When a manager-agent 4.0 does not

openly explain to employees the nature of the changes taking place, the latter may fill the informational void with rumours and conflicting opinions. "*Misconceptions develop in an information vacuum; when misinformation, rumours, etc., are added, misconceptions become non-verbal factors that negatively affect performance and organisational relations*" (R11).

A transparent leader "*openly explains the organisation's position, (...) provides real, objective arguments to support its actions*" (R10) and ensures "*(...) that information, especially that concerning employees' feelings, ideas, and needs, is distributed as necessary within the organisation*" (R9). In the opinion of Respondent 5, "*transparency is a matter of leadership policy and style focused on making facts about organisation's actions and decisions known to its employees*".

5. Discussion

The FIR processes are irreversible and involve deep digitisation, automation supported by advanced IT systems, the industrial Internet of Things, data analytics, and artificial intelligence (De Ruyter *et al.,* 2019). Mobile computing and IT solutions profoundly transform economies, societies, businesses, and, last but not least, the workforce (Xu, 2018).

The survey of 12 medium-level and senior managers-agents allowed four sub-threads within the FIR impact on organizations and their employees to be distinguished: the implementation of new technologies, work automation and digitalisation, the new ways of working, and proactive understanding of the organizational environment.

Advanced technological solutions which are inherent in the FIR not only change the world of work and expectations regarding employees' skills but also create new employment opportunities (De Ruyter et al., 2019). Research shows that new technologies, automation, and digitisation of work, which are used more and more often to optimize the activities of daily tasks, spawn new opportunities and risks (Agostini, Filippini, 2019). Executive managers and human resource professionals define labour relations at a strategic level, e.g. the design of compensation systems, career development, job security (Coyle-Shapiro and Shore, 2007), but it is the manager-agent who is the most prominent representative of the organisation, implementing its strategy on a daily basis.

Organizations evolving towards the FIR adopt new ways of working, as a result of which managers-agents control work teams that are increasingly efficient and leaner. The survey participants were apparently aware of these developments, as they stressed the importance of staying in touch with industry trends and responding to them. The findings of this survey are consistent with those reported by Ardolino et al. (2018), who concluded that in the FIR, managers acting as organization agents

should make conscious and consistent efforts to proactively inspire and motivate employees to exceed organisational expectations.

Organisations' evolution towards the FIR is a dynamic process that requires replacing or adjusting the existing technologies to new requirements in production and innovation management. Along with that, business models appropriate for new products, services, or markets and new forms of collaboration and cooperation have to be built. What it means for managers-agents 4.0 is that now they have to be able to respond to a much wider range of challenges and possess attributes necessary to navigate through the FIR as well as the 'usual' managerial attributes.

Based on the survey's findings, the manager's attributes as an organisation agent were divided into six sub-threads: strategic thinking, flexibility and responsiveness to change, creativity and innovation, cooperation, inspirational motivation, and agility. This is in agreement with the observation made by Kazançoğlu and Ozkan-Özen (2018) and Cañibano (2019), according to whom the paradigm shift in managerial responsibilities towards a strategic role requires managers to focus on aspects extending beyond the administrative function. The survey's participants indicated that as well as preparing employees for change, managers-agents should also encourage them to embrace change and stay abreast of technological advances. In order to achieve this, they should constantly look for new sources of information about recent developments, share it with employees (Slusarczyk, 2018), and help them flexibly adjust to the new circumstances (Vidyarthi *et al.,* 2014).

Cooperation takes place when at least two employees in the organization engage each other in a way that increases managers' and employees' motivation levels and cultivates interdependence among multiple parties (Lee and Taylor, 2014). The survey participants believed in the ability of cooperation to strengthen interpersonal relationships and build an environment of trust that allows skills necessary to innovatively solve problems created by the FIR to be unlocked. The availability of cognitive support from managers-agents motivates employees to work in a transforming environment and helps them exceed expectations and overcome difficulties, no matter how out-of-the-box or challenging they may be (Marín-Idárraga *et al.,* 2016).

The study found more evidence in support of managers-agents assisting and guiding employees through the process of building more creative and innovative teams. The survey participants believed that management styles and managers-agents' responsibilities duties would be changing. The manifold human resource-related issues (increased mobility, intergenerational workforce, changing job descriptions, work-life balance challenges, etc.) faced by organisations evolving towards the FIR (Rana and Sharma, 2019) may not leave choice for their managers-agents but to become digitally savvy and agile in managing employees.

The FIR is revolutionary in the wide-scale use of innovative digital and AI solutions as the focal point for increasing productivity (Schäfer, 2018). This technologically sophisticated organisational environment makes it necessary for managers-agents to appropriately adjust their roles to new challenges. The findings on the third theme (the role of the manager as an organisation agent) revealed four sub-threads in this area: a talent manager, a development initiator, a change visionary, and a transparent leader. The first role is associated with the fact that employees build their value by acquiring specialist competencies, skills and agility, and increasing human capital (Wiblen, 2016) – a talent manager is, therefore, necessary to support them in this process.

The survey participants confirmed this, stating that a manager-agent should oversee the development of human talent in organizations and help employees develop skills they may need to be successful in the future. They agreed with Imperatori *et al.* (2019) that a development initiator and a change visionary belonged to the key roles of managers-agents 4.0. The first of the roles has to do with the dominant role of technological progress in the FIR (Burmeister *et al.,* 2016) that makes it necessary for managers to proactively watch for and respond to technological advances. The ability of a manager as an initiator of development to think critically, analyse and predict were also indicated as necessary for organizations to grow in the FIR. The manager's role as a change visionary was described as one requiring the ability to adapt to change, lead it, and guide the implementation of strategies that result from it.

Transparent leadership was the last of the key roles of manager 40.0 identified. The participants understood a transparent leader as someone who could communicate a clear vision in a complex work environment (Subramanian, 2017) and indicated that managers-agents 4.0 at all levels of management should use a more inclusive leadership style and open two-way communication and incorporate employees' ideas into daily decision-making. According to Subramanian (2017), the FIR requires managers-agents to develop relations with employees based on trust and credibility, because good relations can reduce their resistance to change.

6. Concluding Remarks

This paper provides more insight into the FIR impact on organizations and their employees, identifies the attributes of managers as organization agents, and examines looks at their role in organisations navigating through the FIR. Interviews with 12 purposively selected managers have shown that for managers-agents to be able to seize opportunities offered by the FIR and overcome its challenges, they need 1) key attributes such as strategic thinking, flexibility and responsiveness to change, creativity and innovation, collaboration, inspirational motivation, and agility, and 2) the ability to act as a talent manager, a development initiator, a change visionary, and a transparent leader.

The success of companies joining the FIR depends on whether their managers-agents can 1) implement new technologies, 2) assimilate new ways of thinking, 3) utilise automated and digital solutions, and 4) help employees understand the new organizational environment.

Organisational representative theory suggests that there should be relatively little variation in the way organisational representatives shape and implement employment relationships (Lee and Taylor, 2014). The role of managers-agents is to put in place formalised guidelines that set out clear organisational expectations about employee attitudes, behaviour and performance.

However, this is not always the case. It cannot be assumed that all managers-agents will interpret and implement the organisation's strategy and expectations in the same way. In enacting their role as representatives of the organisation, managers bring their own perspectives on how the organisation should operate. And this means that the way a manager represents the organisation shapes the way it is perceived by employees. The study's findings thus underscore the importance of the manager-agent's' ability to align employees' approaches to work with the challenges of the Fourth Industrial Revolution. The study and its findings argue strongly for the role that manager-agent can play in such a context.

The study provides an important contribution to knowledge development in the stream of research on the role of the manager-agent in the context of FIR. In a unique way, the study argues for the importance of attributes that determine the successful navigation towards FIR that is expected to change the landscape of how work is done in the near future. The contribution of this study is to intensify knowledge (especially in the context of Polish organisations) by drawing attention to the issues of Industrial Revolution 4.0 and the organisation representative theory.

This contribution is in line with the identified gaps in the FIR literature (Deng *et al.,* 2018; De Ruyter *et al.,* 2019) and also takes into account the manager-agent who plays an important role in both preparing and leading employees through organisational change resulting in new ways of working driven by technological advances.

They become contribute to the theoretical and practical knowledge of how organizations and managers evolve towards the FIR, close some gaps in the FIR literature (Ardolino *et al.,* 2018; Dhanpat *et al.,* 2020), and place the role of HRM and a manager-agent during the FIR in a wider perspective (Cappelli and Tavis, 2018; Imperatori *et al.,* 2019; Rana and Sharma, 2019).

7.   Implications and Recommendations

The study has important practical and theoretical implications for understanding how managers-agents navigate through the FIR and ready themselves and employees for

the changes it brings. Its results have been used to build a hypothetical model (Figure 1), which explains how the FIR influences organizations and employees, indicates manager-agents' attributes and roles necessary for them to navigate through the FIR and manage employees in workplaces where new employment relations emerge, and where technology, AI and innovation play a leading role. Managers-agents who want to be leaders in this new environment need HR measures that will effectively convince employees about their key role and will meet their constantly changing expectations (Gadomska-Lila and Rogozińska-Pawełczyk, 2021), as well as offering the best work experience.

The study offers several recommendations for future research. Firstly, it demonstrates that a combination of qualitative and quantitative methods can improve the accuracy and reliability of the results. Secondly, future research should be conducted with a larger sample of participants. Although this study has produced interesting information on managers navigating through the FIR, its findings are only based on the subjective opinions of 12 respondents, all of whom were managers. Thirdly, given that all industries are gradually moving towards the FIR, future research should also include manufacturing, services, and education sectors, etc., or a comparative study should be carried out.

Figure 1. *The Hypothetical Model*
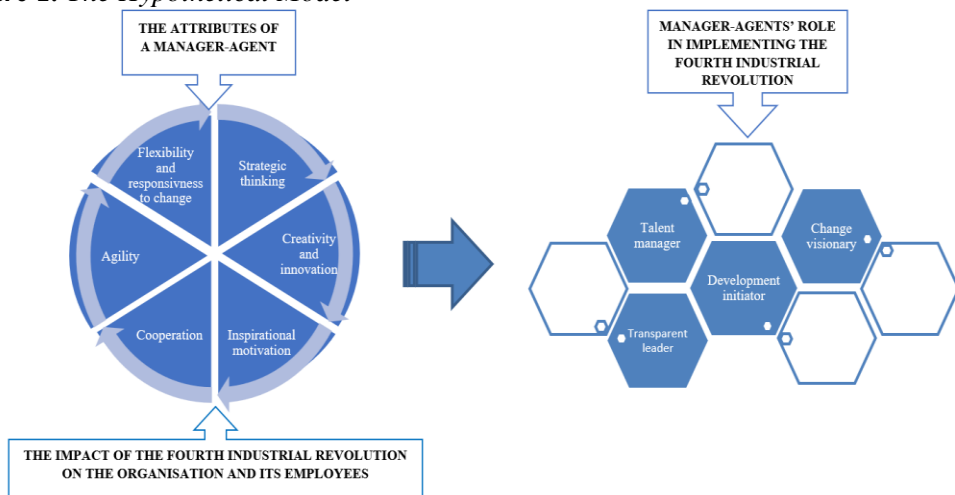
Source: Own study.

Digital and technological advances associated with the FIR are challenging for businesses but help them grow and develop. The role of HRM appears to be less important than innovation and technological change, but it is still significant. Its effectiveness will largely depend on how skilfully managers will use it to make their organisations successful in the increasingly competitive environment. As the attributes and roles of managers as organization agents in the FIR have not been

sufficiently explored, they should be included in future research on managing employees and employment relations during the Fourth Industrial Revolution.

References:

Agostini, L., Filippini, R. 2019. Organizational and managerial challenges in the path toward industry 4.0. European Journal of Innovation Management, 22(3), 406-421. https://doi.org/10.1108/EJIM-02-2018-0030.

Ardolino, M., Rapaccini, N., Saccani, P., Gaiardelli, G., Crespi, G., Ruggeri, C. 2018. The role of digital technologies for the service transformation of industrial companies. International Journal of Production Research, 56(6), 2116-2132. https://doi.org/10.1080/00207543.2017.1324224.

Ashford, B.E., Rogers, K.M. 2012. Is the employee-organization relationship misspecified? The centrality of tribes in experiencing the organization. In: Shore, L.M., Coyle-Shapiro, J.A.M., Tetrick, L.E. (Eds.), The Employee-Organization Relationship: Applications for the 21st Century. Routledge, Taylor & Francis Group, London, 23-53.

Ashford, S.J., Caza, B.B., Reid, E.M. 2018. From surviving to thriving in the gig economy: A research agenda for individuals in the new world of work. Research in Organizational Behavior, 38, 23-41. https://doi.org/10.1016/j.riob.2018.11.001.

Bakuwa, R.C. 2013. Exploring the HR professionals' employee advocate role in a developing country: The case of Malawi. Australian Journal of Business and Management Research, 2(12), 39-48. https://doi.org/10.4102/sajhrm.v18i0.1302.

Braun, V., Clarke, V. 2006. Using Thematic Analysis in Psychology. Qualitative Research in Psychology, 3(2), 77-101. http://dx.doi.org/10.1191/1478088706qp063oa.

Braun, V., Clarke, V., Hayfield, N., Terry, G. 2019. Thematic analysis. Springer, Singapore.

Cañibano, A. 2019. Workplace flexibility as a paradoxical phenomenon: Exploring employee experiences. Human Relations, 72(2), 444-470. https://doi.org/10.1177/0018726718769716.

Cappelli, P., Tavis A. 2018. HR goes agile. Harvard Business Review, 96(2), 46-52.

Coyle-Shapiro, J.A.M., Shore, L.M. 2007. The employee-organization relationship: Where do we go from here? Human Resource Management Review, 17, 166-179.

De Ruiter, M., Schalk, R., Blomme, R.J. 2016. Manager responses to employee dissent about psychological contract breach: A dyadic process approach. Management Communication Quarterly, 30(2), 188-217. https://doi.org/10.1177/0893318915623238.

De Ruyter, A., Brown, M., Burgess, J. 2019. Gig work and the fourth industrial revolution. Journal of International Affairs, 2(1), 37-50. https://doi.org/10.1177/1035304620944296.

Deng, H., Coyle-Shapiro J.A.M., Yang, Q, 2018. Beyond reciprocity: A conservation of resources view on the effects of psychological contract violation on third parties. Journal of Applied Psychology, 103, 561-577. https://doi.org/10.1037/apl0000272.

Dhanpat, N., Buthelezi, Z.P., Joe, M.R., Maphela, T.V., Shongwe, N. 2020. Industry 4.0: The role of human resource professionals. South African Journal of Human Resource Management, 18, 1-11. https://doi.org/10.4102/sajhrm.v18i0.1302.

Elo, S., Kääriäinen M., Kanste O., Pölkki T., Utriainen K., Kyngäs, H. 2014. Qualitative content analysis: A focus on trustworthiness. Sage Open, 4(1), 1-10. https://doi.org/10.1177/2158244014522633.

Etikan, I., Musa, S.A., Alkassim, R.S. 2015. Comparison of convenience sampling and purposive Sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1-4. https://doi.org/10.11648/j.ajtas.20160501.11.

Gadomska-Lila, K., Rogozińska-Pawełczyk, A. 2022. The Role of Pro-Innovative HR Practices and Psychological Contract in Shaping Employee Commitment and Satisfaction: A Case from the Energy Industry. Energies, 15(255), 1-21. https://doi.org/10.3390/en15010255.

Gilbert, C., De Winne S., Sels, L. 2011. The influence of line managers and HR department on employees' affective commitment. International Journal of Human Resource Management, 2, 1618-1637. https://doi.org/10.1080/09585192.2011.565646.

Götz, M., Gracel, J. 2017. Przemysł czwartej generacji (Industry 4.0) – wyzwania dla badań w kontekście międzynarodowym (Industry 4.0 - challenges for research in an international context). Kwartalnik Naukowy Uczelni Vistula, 1(51), 221.

Hermann, M., Pentek, T., Otto, B. 2015. Design Principles for Industrie 4.0 Scenarios: A Literature Review. Dortmund University of Technology, Germany.

Hill, C.E., Knox, S., Thompson, B.J., Williams, E.N., Hess, S.A., Ladany, N. 2005. Consensual qualitative research: An update. Journal of counseling psychology, 52(2), 196-205. https://doi.org/10.1037/0022-0167.52.2.196.

Imperatori, B., Bissola, R., Butera, F., Bodega, D. 2019. Work and HRM in the 4.0 era: Insights and research directions. Studi Organizzativi, 2, 9-26. https://doi.org/10.3280/SO2019-002001.

Jabagi, N., Croteau, A.M., Audebrand, L.K., Marsan, J. 2019. Gig workers' motivation: Thinking beyond carrots and sticks. Journal of Managerial Psychology, 34(4), 192-213. https://doi.org/10.1108/JMP-06-2018-0255.

Jesuthasan, R. 2017. HR's new role: Rethinking and enabling digital engagement. Strategic HR Review, 16(2), 60-65. https://doi.org/10.1108/SHR-01-2017-0009.

Karagonlar, G., Eisenberger, R., Aselage, J. 2016. Reciprocation wary employees discount psychological contract fulfillment. Journal of Organizational Behavior, 37(1), 23-40. https://doi.org/10.1002/job.2016.

Kazançoğlu, Y., Ozkan-Özen, Y.D. 2018. Analyzing workforce 4.0 in the fourth industrial revolution and proposing a road map from operations management perspective with fuzzy DEMATEL. Journal of Enterprise Information Management, 31(6), 891-907. https://doi.org/10.1108/JEIM-01-2017-0015.

Khatri, P., Kumar, S., Pahwa, H.K. 2019. Correlates of Industry 4.0 Leader Traits and Sustained Employability: A Study of Manufacturing Sector in Delhi. NCR Conference: Seventeenth AIMS International Conference on Management, India.

Kohl, K., Swartz, J. 2019. Building Industry 4.0 talent. In: Coetzee, M. (Ed.), Thriving in digital workspaces, Cham, Springer Nature, New York, NY, 15-39.

Kola, A.J., Abdulrahman, A.O., Azeez, A.A. 2019. Entrepreneurial skills in science through authentic learning strategy: A panacea for youth unemployment in Nigeria. South Asian Resource Journal of Humanities and Social Sciences, 1(1), 10-14. https://doi.org/10.36346/sarjhss.2019.v01i01.003.

Lee, J., Taylor, M.S. 2014. Dual roles in psychological contracts: When managers take both agent and principal roles. Human Resource Management Review, 24(1), 95-107. https://doi.org/10.1016/j.hrmr.2013.03.001.

Levinson, H., Price, C.R., Munden, K.J., Solley, C.M. 1962. Men, Management, and Mental Health. Harvard University Press, Cambridge, G.B.

Levitt, H.M., Bamberg, M., Creswell, J.W., Frost, D.W., Josselson, R., Suarez-Orozco, C.

2018. Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board Task Force Report. American Psychologist, 73(1), 26-46. http://dx.doi.org/10.1037/amp0000151.

Lincoln, Y.S., Guba, E.G. 1985. Naturalistic inquiry. Sage publications, Newbury Park, California, CA.

Marín-Idárraga, D.A., Hurtado-González, J.M., Cabello-Medina, C. 2016. The antecedents of exploitation-exploration and their relationship with innovation: A study of Managers' cognitive maps. Creativity and Innovation Management, 25(1), 18-37. https://doi.org/10.1016/j.jom.2011.05.001.

Marshall, C., Rossman, G. 2011. Designing qualitative research (5th ed.). Sage Publication, Thousand Oaks, California, CA.

Mclver, D., Lengnick-Hall, M.L., Lengnick-Hall, C.A. 2018. A strategic approach to work-force analytics: Integrating science and agility. Business Horizons, 61(3), 397-407. https://doi.org/10.1016/j.bushor.2018.01.005.

Naudé, W. 2019. Brilliant technologies and brave entrepreneurs. Journal of International Affair, 72(1), 143-158. https://www.jstor.org/stable/26588350.

Nowell, L.S., Norris, J.M. 2017. Thematic Analysis: Striving to Meet the Trustworthiness Criteria. International Journal of Qualitative Methods, 16, 1-13. https://doi.org/10.1177/1609406917733847.

Oberer, B., Erkollar, A. 2018. Leadership 4.0: Digital Leaders in the Age of Industry 4.0. International Journal of Organizational Leadership. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3337644.

Obushenkova, E., Plester, B., Haworth, N. 2018. Manager-employee psychological contracts: Enter the smartphone. Employee Relations, 40(2), 193-207.

Paresh, S. 2019. Redefining Leadership for the Fourth Industrial Revolution. Available at: https://www.mancosa.co.za/blog/redefining-leadership-for-the-fourth-industrial-revolution.

PARP. 2021. Grupa PFR Czwarta rewolucja przemysłowa i jej wpływ na rynek pracy- raport tematyczny, (PFR Group The fourth industrial revolution and its impact on the labour market - thematic report). Available at: https://www.parp.gov.pl/component/publications/publication/czwarta-rewolucja-przemyslowa-i-jej-wplyw-na-rynek-pracy.

Rana, G., Sharma, R. 2019. Emerging human resource management practices in industry 4.0. Strategic HR Review, 18(4), 176-181. https://doi.org/10.1108/SHR-01-2019-0003.

Randmann, L. 2013. Managers on the both sides of the psychological contract. Journal of Management & Change, 30(31), 124-144.

Rogozińska-Pawełczyk, A. 2020. The high-performance HRM systems in shaping employee performance – an analysis into the mediating effect of the psychological contract based on organisations in Central Poland. Journal for East European Management Studies, 25(3), 581-601. https://doi.org/10.5771/0949-6181-2020-3-581.

Rogozińska-Pawełczyk, A. 2021. Kontrakt psychologiczny w zmieniającym się świecie pracy – przed pandemią COVID-19 i w trakcie jej trwania (The psychological contract in a changing world of work - before and during the COVID-19 pandemic). Wydawnictwo Uniwersytetu Łódzkiego, Łódź. https://doi.org/10.18778/8220-730-9.

Schaefer, D. 2014. Product Development in the Socio-sphere: Game Changing Paradigms for 21st Century Breakthrough Product Development and Innovation. Springer International Publishing, New York, NY.

Schäfer, M. 2018. The fourth industrial revolution: How the EU can lead it. European View, 17(1), 5-12. https://doi.org/10.1177/1781685818762890.

Shaw, P., Varghese, R.M. 2018. Industry 4.0 and future of HR. Journal of Management, 5(6), 96-103.

Shenton, A.K. 2004. Strategies for ensuring trustworthiness in qualitative research projects. Education for Information, 22(2), 63-75. https://doi.org/10.3233/EFI-2004-22201.

Shore, L.M., Porter, L.W., Zahara, S.A. 2004. Employer-oriented strategic approaches to the employee-organization relationship. In: Coyle-Shapiro, J.A.M., Shore, L.M., Taylor, M.S., Tetrick, L.E. (Eds.), The Employment Relationship: Examining Psychological and Contextual Perspectives. Oxford University Press, Oxford, G.B., 289-302.

Ślusarczyk, B. 2018. Industry 4.0: Are we ready? Polish Journal of Management Studies, 17(1), 232-248. https://doi.org/10.17512/pjms.2018.17.1.19.

Subramanian, K.R. 2017. Psychological contract and transparent leadership in organisations. International Research Journal of Advanced Engineering and Science, 2(1), 60-65.

Tekleab, A.G., Taylor, S. 2003. Aren't there two parties in an employment relationship? Antecedents and consequences of organization-employee agreement on contract obligations and violations. Journal of Organizational Behavior, 24, 585-608. https://doi.org/10.1002/ job.204.

Tesfatsion, L., Ludd, K.L. 2006. Agent-based computational economics: A constructive approach to economic theory. Handbook of computational economics. Elsevier, North Holland.

Vaismoradi, M., Turunen, H., Bondas, T. 2013. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. Nursing and Health Sciences, 15(3), 398-405.

Vidyarthi, P.R., Chaudhry, A., Anand, S., Liden, R.C. 2014. Flexibility i-deals: How much is ideal? Journal of Managerial Psychology, 29, 246-265. https://doi.org/10.1108/ JMP-07-2012-0225.

Welch, J., Hodge, M. 2018. Assessing impact: The role of leadership competency models ın developing effective school leaders. School Leadership and Management, 38(4), 355-377. https://doi.org/10.1080/13632434.2017.1411900.

Wellin, M. 2016. Managing the psychological contract: Using the personal deal to increase business performance. CRC Press, Boca Raton.

Wiblen, S. 2016. Framing the usefulness of eHRM in talent management: A case study of talent identification in a professional services firm. Canadian Journal of Administrative Sciences, 33, 95-107. https://doi.org/10.1002/CJAS.1378.

World Economic Forum. 2020. Jobs of Tomorrow Mapping Opportunity in the New Economy. Available at: https://www.weforum.org/agenda/2020/01/reskilling-revolution-future-of-work.

Xu, M., David, J.M., Kim, S.H. 2018. The fourth industrial revolution: Opportunities and challenges. International Journal of Financial Research, 9(2), 90-95. https://doi.org/10.5430/ijfr.v9n2p90.