AI Boosts Performance but Affects Employees' Emotion

Abstract

Drawing on Lazarus's appraisal theory, the current research provides an integrative review of AI (artificial intelligence) and discusses its implication on emotion. Although prior studies have praised the merits of AI-M (AI-driven management), how AI-M affects employees and their emotion is not always clear. To respond to the knowledge gap, we conduct a new research and seek for answers through the amalgamation and analysis of both theoretical viewpoints and empirical studies. Through this process, we have learnt that AI-M brings diverse triggers of negative emotion, affecting both managers and employees. To employees, AI-M may lead to job insecurity and less career development opportunities. To managers, AI-M may take over the ownership of decision-making and compromise their influence in the workplace. In order to cope with negative emotion, we review the literature of emotional intelligence (EI) and propose three EI-embedded strategies to the employees. We also propose three managerial schemes, enabling managers to guide their subordinates in coping with negative emotion. Research findings not only bring new insights into the AI-emotion literature, but also support managers in alleviating AI-M's impact on employees. The article concludes with the directions for future research.

Keywords: AI; Emotion; Emotional Intelligence; Employees; Management.

Introduction

Artificial intelligence (AI) appears both interesting and ubiquitous in the modern life. AI has been applied to marketing strategies, energy saving, weather forecast, risk analysis, customer services, education and business solutions (Brown, Ling & Gurdeniz, 2017; Jaiswal & Arun, 2021; Tuli, Gill, Xu *et al*., 2022). AI processes smart technology, assisting both entrepreneurs and organizations in delivering better-quality service and more efficient performance (Chang, Abdalla & Lasyoud, 2021; Smith & Anderson, 2014; Haefnera, Wincenta, Parida, & Gassmann, 2021). Recently AI has started to show its influence in the field of employee management; for instance, managers have improved employee performance through the AI-driven techniques, such as performance-tracking and KPI-monitoring software (Ernst & Young, 2018; Vrontis, Christofi, Pereira *et al*., 2021). Different from the conventional approach that focuses on the target achievement, AI-Driven Management (AI-M) adopts a more holistic and interactive approach, enabling both managers and subordinates to monitor the performance progress more effectively, from the initial goal-setting stage to the final completion stage (Chang, 2020; Gonzales, Capman, Oswald *et al*., 2019). Businesses and enterprises also adopt *big-data* in their employee management practices, with a view that AI offers better insights into how to execute and operate in performance appraisal, staff recruitment and succession planning and performance management (Pan, Froese, Liu *et al.*, 2021; Wang, Wang & Huang, 2017). Inspired by the aforementioned AI studies, we are intrigued to know whether AI affects employees, and if the answer is positive, how?

In the current research, we focus on the emotion of employees, with the following rationale. On the one hand, emotion is a subjective and conscious experience that is characterized by psycho-physiological expressions, biological reactions and mental states (Kleinginna & Kleinginna, 1981; Lazarus, 1991). Emotion is reciprocally influential with mood, temperament, personality, disposition, and motivation (Ortony *et al*., 1988; Pankseep, 2005). More specifically, negative emotion refers to an affective state that is characterized by physiological and

neuro-hormonal changes arising from a challenging situation, leading to feelings of stress, anxiety, anger, loss, disappointment, and sadness (Lampert & Phelps, 2013; Lazarus, 1998). Negative emotion is contagious and detrimental, causing various behavioral and physiological outcomes (Goleman, Boyatzis & Mckee, 2002). Although different in nature, previous research has implied that emotion is crucial to the individuals and affects their life.

On the other hand, emotion has an ability to affect employees' attitudes and behaviors, generating different impact on their organizational commitment, job loyalty and lying tendency at work (Celse et al., 2016). Emotion is related with employees' organizational identification and deviance behavior in the workplace (Chang et al., 2013). More specifically, emotion reacts to the stimuli and affects health swiftly (Gross, 1998), and people with stable emotion can better cope with threat and stress (Haplerin et al., 2009). Emotion is also related to the individual differences; to be exact, people express their emotion differently and hence different outcomes may follow (Ortony et al., 1988). Following this logic, Goleman (1998) explains that emotional intelligence is crucial to the expression of opinion and behavior. Compared to the managers with lower EI, those with higher EI are more capable of inspiring and motivating their subordinates, which in turn improves both employee engagement and job commitment (Goleman et al., 2002). Similarly, Goleman (1998) claims that employees with higher EI are more welcomed by their colleagues and often keep good interaction with their managers. Although prior studies have different research aims and objectives, jointly they have conveyed a message that emotion is vital to the employees and affects their workplace.

Overall, scholars generally appreciate the importance of emotion at work, but actually little is known about the influence of AI-M on emotion. Prior studies have attempted to analyze the role of emotion from personnel perspectives (e.g., Celse et al., 2016; Jaiswal, Arun & Varma, 2021), but whether their findings are applicable to the AI-managed workplace is not always clear. Previous research has investigated the formation of emotion and clarified its implication on behavior (e.g., Mayer et al., 1999; Turner et al., 2002), but whether the formation is affected by

AI-M is barely known. To respond to these knowledge gaps, we have therefore conducted a new research and our goals are threefold: i). To explore the benefits and limitations of AI-driven management; ii). To analyze and critically discuss the potential relationship between AI-M and emotion; and, finally, iii). Based on the research findings, we are keen to advance the knowledge of AI-M, hence bringing new insights into the AI-emotion literature.

Literature review

What is emotion? Is emotion an internal perception or external behavior? Is emotion related to conscious- or unconscious-experience?   In order to answer these questions, scholars have conducted a variety of studies and proposed numerous perspectives. Each perspective has its unique character and merits, interpreting the nature of emotion from different viewpoints. Broadly speaking, scholars have attempted to explain the construct of emotion through three perspectives. These are: feeling-, motivation- and appraisal-perspectives.

From the *feeling-perspective*, emotions are intentional feelings of importance, which could be either pleasant or unpleasant (Pugmire, 1998). Emotional feelings are '*inextricably intertwined with the world-directed aspect of emotion, so that an adequate account of an emotion's intentionality… will at the same time capture an important aspect of its phenomenology*' (Goldie, 2002: 242). From the *motivation-perspective*, emotions are irreducible and related to judgments and perceptions, which are crucial to central motive states and behavioral outcomes (Frijda, 1986). From the *appraisal-perspective*, emotions are extracted from individual appraisals of events, such as subjective evaluations and explanations of events; simply put, emotions are determined by personal appraisals of the stimulus, in which the appraisals lead to different reactions in different people (Lazarus, 1991).

In the current research, we have adopted the appraisal-perspective to discuss the construct of emotion, with the following reasons. To begin with, compared to other two perspectives, the appraisal-perspective offers a clearer cognitive construct of emotion, allowing the diagnosis and

interpretation of emotion (Ortony, Clore & Collins, 1988). Second, through the appraisal-perspective, researchers are able to measure the elements of emotion and analyze its subtle influence (Scherer, 2005; Kuo & Chang, 2021), which is important to the current research and helps interpret the relationship between emotion and AI-M (AI-driven management). Third, one widely-accepted way to understand the construct of emotion is through the examination of emotion components, such as evaluative-, physiological-, phenomenological-, expressive-, behavioral- and mental-components. Through the appraisal of different components, researchers can further discuss the construct of emotion and analyze its impact on behavior (*see full discussion in*: Prinz, 2004).

The literature on the appraisal-perspective has expanded considerably over the past two decades, primarily under the influence of Richard S Lazarus (1991, 1998, 2001). Lazarus (1998) defines emotions according to '*core-relational-themes*' which are intuitive summaries of the moral appraisals (e.g. of relevance, goal conduciveness) involved in different emotions. These themes may help define both the function and eliciting conditions of the emotion. Specifically, Lazarus (1991) identifies five distinct themes, including: *Anger* (a demeaning offense against me and mine), *fear* (facing an immediate, concrete, and overwhelming physical danger), *sadness* (having experienced an irrevocable loss), *disgust* (taking in or being too close to an indigestible object or idea) and *happiness* (making reasonable progress toward the realization of a goal). At the heart of Lazarus's theory is what he called *appraisal*; to be exact, before emotion occurs, people make an automatic, often unconscious, assessment of what is happening and what it may mean for them or those they care about (Lazarus, 1991). That is, emotion is not only rational but also a necessary component of survival, an informative and imperative element in guiding one's thought and behavior in daily life (Goleman, 1995).

Following this line of research, Pankseep (2005) defines emotion as a biological state associated with the nerve systems, which are brought on by both neuro- and physiological-changes. Scholars indicate that emotion is associated with temperament,

disposition, and behavioral motifs (Cabral & Almeida, 2020; Kuo *et al*., 2020). According to the *component process model* (Scherer, 2005), emotion comprises five elements, including: cognitive appraisal, bodily symptoms, action tendencies, expression and feelings. Scherer claims that emotional experience requires all components to be coordinated and synchronized for a short period of time, and that the expression of emotion is driven by one's appraisal processes. Similarly, Kleinginna and Kleinginna (1981) describe emotion as a complex set of interactions between subjective and objective factors, regulated by the neural-hormonal system. Moreover, emotion has versatile roles and affects people in many ways; for instance, it helps rising affective experiences, generating cognitive processes, activating physiological adjustments to the arousing conditions, and leading to the goal-directed behavior (Goleman, 1995; Goleman, 1998). To sum up, although different in nature, prior studies altogether have conveyed a message that emotion is based on evaluative and subjective appraisals, deriving from one's judgement of circumstances, interpretation of mood, as well as the interaction with the environmental factors.

Aligning with the development of emotion-oriented research, scholars are also intrigued to know the role of emotion in the workplace. Scholars have conducted conceptual and empirical studies, producing both informative and meaningful research findings. Scholars first claim that emotion facilitates a healthy balance between one's negative- and positive-energy; that is, emotion acts as a buffer, venting out unpleasant energy and hence protecting one's well-being (Gross & John, 2003). Scholars also indicate that emotion does not confine itself at the individual level. Although emotion may commence from individuals, its effect is often wide and contagious; for instance, positive emotion from one employee can generate positive momentum and affects other colleagues, which in turn promotes team stability and teamwork (Goleman, Boyatzis & Mckee, 2002; Gomez-Mejia, Balkin & Cardy, 2008; Itegboje & Chang, 2021). Although different in nature, prior studies jointly have affirmed the importance of emotion in the workplace; that is, emotion is crucial to both employees, colleagues and their organizations.

AI, AI-M and employee's emotion

During the literature review, we have learnt that emotion is an influential factor to the employees, affecting their feelings, behaviors as well as overall performance. Based on the analysis of prior studies, we have also learnt that understanding emotion and its implication on employees is not only necessary, but also practical to any managerial practitioners. Since AI has exercised its influence into practices and policies of employee management (*c.f.* Ernst & Young, 2018; Vrontis, Christofi, Pereira *et al*., 2021), analyzing emotion in the context of AI-driven management has become a vital and timing matter. We believe it is necessary to conduct a new research in this important field, as both employees, managers and their organizations can benefit from the research findings. In the current research, more specifically, we ponder whether AI-driven management (AI-M) is related to employee's emotion. Particularly, we ask: *Does AI-M affect employee's emotion in anyway*? If the answer is positive, we wonder: *Is there anything that managers should know before they implement AI-M* ?   In the following section, we would like to seek for answers to the aforementioned questions through scrutinizing the relationship across AI, AI-M and employee's emotion. Details follow.

Based on our observation, AI has gradually exercised its influence into the field of employee management. Researchers also have noticed the potential of AI-M and discussed its applicability in personnel management (e.g., Jaiswal *et al*., 2019; Gonzales *et al*., 2019; Vrontis *et al*., 2021;). For instance, AI-M helps managers to analyze the best performance models and understand how employees interact with AI (Ernst & Young, 2018). AI-M assists managers in understanding how different digital-technology can be constructed and implemented into the existing managerial practices (Malik *et al*., 2019). Inspired by this line of research, Chang (2020) proposes an APM model, explaining how AI-M helps produce competitive advantages at the organizational level. Due to the influence of AI-M, employees shall upskill themselves in data analysis, complex cognitive and continuous learning skills (Jaiswal *et al*., 2019).

Regardless of its opportunities and numerous merits, however, AI-M may still affect

employees and their organizations in different ways. For instance, AI may replace human labor in mechanical and routine tasks of a job, such as manual and non-heuristic duties (Huang & Rust, 2018). When bearing the likelihood of job-replacement in mind, employees easily develop concerns about their job security and career development, leading to the negative feeling about AI-M (Chang, 2020). Some managers may also worry about the possibility that AI may compromise their job roles and affect their influence in the workplace; to be specific, AI has an ability to take over the ownership and responsibility of decision-making (Duchessi, O'Keefe & o'Leary, 1993), and AI acts as career threat rather than opportunity in the eyes of some managers (Chang, Abdalla & Lasyoud, 2021). After reviewing the findings from conceptual research and empirical studies, our proposition is: although AI-M has many merits, it still affects emotion in various ways. AI-M may carry different triggers of negative emotion to both employees and their managers. For the sake of clarity, we have presented potential triggers in Table I, explaining the characteristics of different triggers and their subtle influences.

< Table I Near Here >

As it is shown in Table I, we have presented numerous triggers of negative emotion into two broad categories. These are: *employees' viewpoints* and *managers' viewpoints* (we acknowledge the limitation of our categorical approach and will discuss its implication later). At the first categories, we discuss the characteristics of triggers at the individual level, explaining how different triggers affect individual employees. At the second category, we discuss the characteristics of triggers at the managerial and organizational level, explaining how different triggers affect managers and their organizations. On the basis of *core relational themes* (appraisal theory; Lazarus, 1991 & 1998), we then link potential triggers to the corresponding themes, explaining the influence of triggers on emotion. By doing so, we believe the relationships between potential triggers and corresponding emotional responses can be established and examined in a systematic manner.

Take the first trigger for instance, when employees perceive a threat of labor replacement, they may develop a feeling of fear, such as the fear of job-share, job-taken-over, or even job-lost. According to Chang (2019), *job-share* means that some of the job tasks are shared by the AI, whereas *job-taken-over* means that some of the job tasks are replaced by the AI, allowing employees to work on separate tasks, such as more cognition-demanding or judgment-required tasks. In the situations of 'job-share' and 'job-taken-over', although employees are still employed by the organization, employees may feel a bit uncertain and worry about their future career opportunity (Chang, 2019); after all, the autonomy and ownership of jobs are not completely decided by the employees themselves, but affected by the AI (Wang *et al*., 2017). Moreover, 'job-lost' means that the jobs are completely replaced by the AI, in which human workers are no longer required and hence become unemployed. As a result, the unemployed people may feel unfair about the situation and develop a feeling of anger. Further details are outlined in Table I.

In view of what has preceded, we have learnt that AI is not always welcomed at work, and that AI-M is like a double-edged sword in employee management. On the one hand, AI-M assists organizations in improving the overall performance, leading to better organizational competitive advantages (Ernst & Young, 2018; Vrontis *et al*., 2021). On the other hand, however, AI-M also possesses the ability to take over the ownership of decision-making and contains some risks of job redundancy, affecting one's career opportunities and well-being (Chang, 2020; Duchessi *et al*., 1993; Jaiswal *et al*., 2021). AI-M may sound omnipotent, but its side-effect requires close attention from the managerial side. Our proposition is: if not handled well, the abrupt implementation of AI-oriented policies and practices may cause negative emotion to both employees and managers; and, consequently, every member in the organization will suffer.

Solution to the negative emotion: Emotional intelligence

Given that emotion is significant to the employee (Celse *et al*., 2016) and negative emotion is detrimental in the workplace (Goleman *et al*., 2002), this article now turns to review the strategies

that managers may possibly adopt, assisting their employees in coping with negative emotion. In particular, we recommend the construct of *emotional intelligence* (EI; Goleman, 1998) and our proposition is: employees with higher EI are more capable of dealing with negative emotion, and managers can also adopt EI-embedded strategies to support their employees in coping with negative emotion. Our rationale is further discussed below.

EI, EQ (emotional quotient) and EIQ (emotional intelligence quotient) are interchangeable terms, in which EI is defined as an ability to recognize, understand and manage one's emotion (Goleman, 1998). One decade later, Colman (2008) revises the definition to one's ability to monitor his/her own emotions, as well as those of other people, to discriminate between different emotions, and to label them appropriately. The evolution of definitions has conveyed two meaningful messages: *First*, in Goleman's definition, the construct of emotional intelligence is like a trait, such as a unique individual character, or a dimension of one's personality; and, *Second*, in Colman's definition, EI possess a wider scope and carries deeper influence on behavior. EI not only helps individuals to judge one's and other's emotions, but also integrates the observational and evaluative cues in interpreting emotion and its influence. EI involves the assessment of emotional states, expression of emotions, as well as the behavioral demonstrations (Higuera, 2018). Although different in nature, prior studies jointly have conveyed an important message that EI is associated with subjective evaluation and decision-making process. Following the same logic, we may propose that EI is related to behavior and, to some extent, EI may have an ability to generate subtle impact on behavior. Our proposition is: EI can be interpreted as a trait-based ability, helping individuals to conduct subjective evaluation on their own and other's emotions (*this viewpoint is congruent with Goleman's and Colman's definitions*). At the same time, more relevant to the current research, EI may also help individuals to decide what to do, and how to do, following their own interpretation of emotions (*this viewpoint is congruent with Higuera's research findings*).

Aligning with the research of emotion, scholars are intrigued to know the composition of EI,

but their views remain inconclusive; for instance, the *trait model* explains that EI is composed of multi components, such as self-awareness, behavioral dispositions and perceived abilities (Petrides & Furnham, 2001). Scholars also claim that self-awareness affects people's decision-making and ethical standard (Chang, Max & Celse, 2021). Next, the *ability model* highlights the imperativeness of individual's ability in processing emotional information, which is then used to help people to navigate the social environment (Mayer, Salovey & Caruso, 2004). Finally, the *emotion recognition model* focuses on the process of identifying human emotion (Bänziger, 2014); more specifically, scholars indicate that EI is involved with the capacity to: i). perceive emotion; ii). integrate emotion to facilitate thought; iii). understand emotions and; iv). to regulate emotions to promote personal growth (MacCann, Joseph, Newman & Roberts, 2014). To sum up, although prior studies have analyzed the composition of EI through different viewpoints, jointly they have offered preliminary credence to support a relationship between EI and emotion. That is to say, previous research has affirmed a phenomenon that EI plays a salient and imperative role in adjusting people's thought and behavior.

Actually, among conceptual research and empirical studies, the relationship between EI and its influence has received some academic attention. In daily life events, for instance, people with higher EI tend to have better mental health, well-being, leadership skills, and overall performance (Goleman, 1995; Joseph & Newman, 2010). People with higher EI often interpret their life problems (e.g., life challenges and career obstacles) more optimistically, and they are willing to consider whether their problems could be converted into opportunities (Stoltz, 1997). Moreover, EI has shown its merits in the workplace too; for example, employees with higher EI are more likely to observe the variance in their own emotions, acting as a preventive mechanism of burnout (Mayer, Caruso, & Salovey, 1999). Goleman (1998) indicates that EI is more practical and valuable than intelligence quotient (IQ) in management, as leaders with higher EI are more capable of understanding their subordinates' emotional changes, facilitating a healthier interaction between managers and subordinates. To summarize, prior studies have conveyed an

important message that, when people have higher EI, they are more likely to understand what happens and where they stand in their environment. EI helps people to stay calm and evaluate the reality from a more objective and positive manner; that is, EI provides people with important psychological comfort and energy to deal with the problems and challenges that they have experienced (Mayer *et al*., 1999). Overall, empirical studies have offered ample support to our proposition that employees with higher EI are more capable of dealing with negative emotion.

Following the literature review and discussion above, we have learnt that EI is not only crucial to the employee, but also offers them an opportunity to understand their emotion and cognate influences. For the same reason, the current research is keen to recommend two types of strategies, aiming to assist employees in coping with their negative emotion (see Table II for summary). As it is shown in Table II, the first type is EI-embedded and targeted at the individual level, whereas the second type is for the managerial level, allowing managers to guide their subordinates in coping with negative emotion. The first type (employee's strategies) comprises three strategies, including: *cognitive reframing*, *classical conditioning process*, and *positive reinforcement*. The second type (manager's strategies) comprises three schemes, including: *focus-group scheme*, *mentor-mentee scheme*, and *pilot scheme*. Details follow.

< Table II Near Here >

Cognitive reframing

Cognitive reframing is a psychological technique that consists of identifying and then changing the way situations, experiences, events, ideas, and/or emotions are viewed (Robson Jr & Troutman-Jordan, 2014). Cognitive reframing is like a tactic that trains people to think differently about difficulties that they cannot actually change, and then adopt a more positive attitude to find out the marginal benefit. Cognitive reframing is related to the appraisal theory (*problem-focused coping*; Lazarus, 1991); specifically, when the problem cannot be resolved immediately, the problem-evaluating process matters; and, when the problem can be evaluated with limited interference of emotion, it is more likely to be resolved.

For instance, if doing mundane jobs under the sunshine is unavoidable and unpleasant, reframing the situation can help. One way to do this is by thinking: '*I got an opportunity to leave the tedious office and embrace fresh air outside, so doing the jobs under the sunshine is not that bad*'. In the future workplace, AI will become influential and ubiquitous across sectors (Ernst & Young, 2018; Vrontis *et al*., 2021); as such, avoiding AI seems not the best strategy for the employees. Following the logic of cognitive reframing, we recommend employees to get themselves familiar with AI and, if possible, upskill themselves with digital knowledge and continuous learning skills (Jaiswal *et al*., 2021). In particular, if AI does imply negative impact, it would be practical and sensible for employees to explore its potential benefit and maximize such benefit. By doing so, employees will be able to appreciate AI's benefit and concurrently vent out their AI-related negative emotions, restoring their confidence in the AI-M workplace.

Classical conditioning process

Classical conditioning process involves learning about the association of two or more events (Turkkan, 1989); for example, if events A and B often emerge about the same time, when event A emerges, people would expect event B to follow. According to Turkkan (1989), when two events (or stimuli) generally occur together, encountering one can bring the other to mind; and due to effect of expectancy, people tend to interpret such events more neutrally. The neutral effect of 'classical conditioning process' can be further explained through the appraisal theory (Lazarus, 1991); more specifically, if the problem (such as AI challenges in the AI-M workplace) and cognitive outcome (such as negative emotion) often occur together, people shall appraise the association between the two events more neutrally; in other words, when people are able to 'expect' the outcome of AI challenges in advance, people shall be less affected by the outcome.

Following the logic of 'classical conditioning process', we advise employees to adopt a more proactive attitude to respond to the potential side-effect of AI-M. Our proposition is: when people are willing to associate AI-M with its side-effect (i.e., putting two events together), they would be

more likely to interpret such side-effect in a neutral manner; as a result, people would feel more psychologically prepared to respond to the side-effect. Based on above reasoning, the 'classical conditioning process' offers a protective mechanism, acting as psychological buffer and preparedness (Wills & Isasi, 2007). As such, when people could expect what problems may arise, or when people are told what may come in advance, they would feel more confident and better-prepared in coping with the problems. Our viewpoint is: the implementation of AI-M needs to be planned carefully, as abrupt implementation may cause problems and bring triggers of negative emotion (Duchessi *et al.*, 1993; Chang, 2019). For the same reason, if managers can inform their employees of the possibility that AI-M may cause problems (such as negative emotion), allowing employees to associate AI-M with negative emotion in advance, we believe that employees would be more prepared and feel more confident in dealing with the arrival of negative emotion.

Positive reinforcement

Behavior can be strengthened through positive reinforcement when something pleasant or desirable occurs following the behavior (Schwartz & Reisberg, 1991); the heartland of positive reinforcement is: when people receive the reward after performing a particular behavior, they tend to associate the behavior with the reward and, consequently, they will repeat the same behavior more often. The aforementioned association and its influence can be further explained by the component process model (Scherer, 2005). Scherer indicates that emotion comprises different elements, such as cognitive appraisal, bodily symptoms, action tendencies, expression and feelings. Emotional experience requires different components to be coordinated and synchronized for a short period of time, and the expression of emotion is often driven by one's appraisal processes (Scherer, 2005). Following this logic, it is reasonable to infer that, apart from the effect of positive rewards (such as receiving rewards after performing a particular behavior), positive emotion can also increase the frequency of such behavior.

As aforementioned in the literature review, managers and organizations are keen to apply AI in their business operations and personnel management (Gonzales *et al*., 2019; Malik *et al*., 2019). Therefore we encourage employees to adopt a more positive attitude and appreciate the potential rewards during their interaction with AI. After all, AI does bring positive merits to the individual employees, such as time-saving, efficiency-improvement, and accuracy-enhancement in their job duties (Ernst & Young, 2018; Vrontis *et al*., 2021). Our reasoning is: when employees understand the potential of AI and receive its benefits (such as positive reward), they would be more likely to form a positive emotion about AI, and they would be more willing to interact with AI. When employees accumulate more positive experiences in interacting with AI, they are more likely to develop their confidence in applying AI into their job duties. It is also important to note that, compared to the people with limited AI-experience, people with AI-knowledge and positive attitude will be more welcomed in the future job markets (Jaiswal *et al*., 2021).

Reflection of employee's strategies

The three strategies proposed above do not target the sources of 'negative emotion' directly; instead, they have offered employees alternative perspectives to neutralize the influence of AI on emotion (e.g., positiveness, optimism, positive emotion). One might argue, for instance, that these strategies do not tackle with the sources directly, so their coping efficacy might be questionable; nevertheless, we believe these strategies are still valid for two reasons. First, emotion is not a constant variable but flows with the environmental factors (Cabral & Almeida, 2020). Second, emotion is not a physical element and cannot be removed easily (Pankseep, 2005). Rather than tackling with the negative emotion directly, adding more positive- and optimistic-elements to neutralize the negative emotion seems more feasible (We are aware of the drawback of such neutralization approach and will discuss its implication later).

Following the discussion of three EI-embedded strategies, this article now turns to introduce three emotion-coping schemes, which can be adopted to deal with the negative emotion resulted

from AI-M organizations and workplace. The three schemes are proposed for the managerial level, allowing managers to guide their subordinates in coping with negative emotion. The three schemes include: *focus-group scheme*, *mentor-mentee scheme*, and *pilot scheme*. Details follow:

Focus-group scheme

In plain language, focus-group is a group-oriented activity, discussing on pre-assigned theme(s). Morgan (1996) indicates that the discussion could be guided by a moderator, or following the natural interaction between group members, hence providing rich information to the participants. Focus-group allows participants to share views and exchange experiences in a flexible and socially supportive way (Morgan, 1996). As such, prior to the implementation of AI-M, we recommend managers to conduct focus-group for their employees, in which managers can introduce the information of AI-M and, simultaneously, gather employees' expectation and concerns of AI-M. Managers can use focus-group to analyze the readiness of the employees for AI-M, guiding their employees to prepare for the implication of AI-M. Moreover, during the implementation of AI-M, managers may also use focus-group to collect feedback from the employees, monitoring the progress of AI-M from employees' perspectives more accurately.

Mentor-mentee scheme

Mentoring is a common development tool, in which a mentor (more experienced member of staff) supports a mentee (less experienced member) through knowledge-sharing activities. Viney and Mckimm (2010) explains that a good mentor-mentee scheme allows mentors to support the development of mentees and, when undertaken properly, mentoring can be a highly effective empowerment tool, supporting mentees to solve problems and progress in their career. During the implementation of AI-M, when managers detect that their subordinates are influenced by AI-M, we advise managers to consider a mentor-mentee scheme in two steps: *First*, managers shall identify the staff who can better cope with AI-M's influence and train these employees to become

mentors. *Second*, after the mentors are well trained and equipped with mentoring skills, managers may assign the mentors to the concerned mentees, i.e., those who are struggling with or affected by AI-M. In addition, managers shall provide a clear framework that outlines the details of mentor-mentee schemes; for example, duties of mentors and mentees, frequency and duration of meetings. A clear framework helps both mentors and mentees appreciate their respective roles during the mentoring activities, facilitating the effectiveness of mentoring schemes (Viney & Mckimm, 2010). It is our hope that, with the support from the mentor-mentee schemes, mentees can cope with AI-M's influence more effectively.

Pilot scheme

Pilot scheme is a small activity which is carried out as a test to see if an idea may work. Bryman and Bell (2006) explains that a pilot scheme helps prove the viability of a proposed idea, analyzing the potential obstacles and identifying its possible solutions. Following this logic, we advise managers to consider a pilot scheme prior to the implementation of AI-M, with three benefits. First, in the field of employee management, a pilot scheme allows managers to observe the influence of a proposed policy in a small-scale context (Mathis, Jackson, Valentine & Meglich, 2017). Our viewpoint is: if managers can pilot AI-M through a small sample, they shall be able to estimate whether AI-M generates any negative impact on their workforce, business operations or other aspects of the organization. Second, if AI-M does carry side-effect and cause problems to the employees, fixing the problems within a small-scale context would be easier. As a rule of thumb, bigger problems usually mean higher cost, so the expense of rectifying smaller problems would be more economical and bearable. Third, a pilot scheme usually offers a chance of *trial-and-error*, enabling managers to find out the best way to reach a desired result. Scholars have commented that AI and its application on employee management is still at its infancy stage (Malik *et al*., 2019; Vrontis *et al*., 2021), so running pilot schemes shall help managers to explore the best applicability of AI-M.

Reflection of manager's strategies

Overall, we have proposed three strategies at the managerial level, providing managers different ways to support their employees. The first strategy (focus-group scheme) provides employees a great opportunity of experience-sharing between group members. For those who suffer from AI-M's influence (such as negative emotion), they can learn the coping skills from their colleagues and apply skills to themselves immediately. The second strategy (mentor-mentee scheme) offers a more personal support in problem solving (such as solving negative emotion). With the guidance from more experienced mentors, the mentees (i.e., those who suffer from AI-M's influence) shall feel more confident in dealing with their negative emotion. The third strategy is more proactive, as managers could use pilot schemes to probe whether AI-M may cause any problems to the employees (such as negative emotion). To sum up, although different in nature, the three strategies aforementioned are all practical and inexpensive, allowing managers to guide their subordinates in coping with negative emotion.

Conclusion

Drawing on multi-disciplinary literature (e.g., appraisal theory, EI theory and component process model), the current research provides an integrative review of AI and discusses its implication on emotion. Prior studies indicate that AI-driven management (AI-M) has great potential in personnel management, such as better managerial practices (Ernst & Young, 2018; Vrontis *et al*., 2021) and more holistic appraisals (Chang, 2019; Gonzales, Capman, Oswald *et al*., 2019). Although prior studies have demonstrated the merits of AI-M, how AI affects employee management is not always clear, and how AI-M affects emotion is still unknown. To respond to these knowledge gaps, we conduct a new research and seek for answers through the amalgamation and analysis of both conceptual research and empirical studies. Research findings are meaningful in several ways, bringing innovative and valuable insights into the AI and

employee management literature.

To begin with, the current research has found that AI-M may imply diverse triggers of negative emotion, affecting both employees and their managers. During the literature review, we have examined and critically discussed the causal nexus between AI and employee's emotion. Specifically, we have learnt that AI-M may affect employees in their perception of job security, career development and well-being (Huang & Rust, 2018; Vrontis *et al*., 2021). We have also found that managers may suffer from AI-M in the aspects of workplace influence, decision-making responsibility and career opportunity (Duchessi *et al*., 1993; Chang, 2019). That is, AI-M can become a salient trigger of negative emotion.

Next, as it is analyzed in the literature review, scholars generally agree that people with higher EI (emotional intelligence) are more capable of coping with negative emotion (Joseph & Newman, 2010; Mayer *et al*., 1999). Individuals with higher levels of EI are more likely to have better interpersonal relationship in the workplace, leading to higher job satisfaction, better well-being ad career satisfaction (Goleman, 1995; Goleman, 1998; Kuo & Chang, 2021). Following this logic, we have proposed three EI-related strategies to the individual employees. These are: *cognitive reframing*, *classical conditioning process*, and *positive reinforcement*. Although different in nature, these three coping strategies all assist employees in dealing with their negative emotion. Based on the literature review, we have also learnt that EI is a crucial and significant element in neutralizing negative emotion, supporting employees in the context of AI-M. These findings have advanced the knowledge of the 'EI-emotion coping' relationship.

Moreover, as discussed in the literature review, the concerns (of job insecurity and compromised career opportunity) may result in negative consequence, such as poor job satisfaction and deteriorated well-being (Goleman, 1995; Chang, 2020). These concerns may also become triggers of negative emotion (as outlined in Table I). In order to deal with negative emotion, we have proposed three coping schemes (*focus-group*, *mentor-mentee* and *pilot*), enabling managers to support their subordinates in coping with negative emotion. Based on our

knowledge, the current research is the first of its kind in analyzing AI's implication on emotion, and we have offered practical solutions in coping with negative emotion. The proposed coping schemes have important implication on employee management, particularly in the context of AI-M. It is our hope that, when implementing AI-M, both managers and organization can benefit from our research findings in their managerial policies and practices.

Last but not least, following the reviews of previous research findings, we have learnt that the design and implementation of AI-M is crucial to both employees and their organizations, in which managers play an important role in executing AI-M (Chang, 2020). We have also found that, if the AI-M is not handled well, employees may develop concerns over job security and career development opportunity (Duchessi *et al.*, 1993; Chang, 2019). To some extent, these empirical findings are congruent with the prediction of job replacement model (Huang & Rust, 2018), thus providing an important line of support to the AI-job replacement literature. Yet, recent studies actually claim that job replacement phenomenon may not necessarily happen if employees are willing to upskill themselves in data analysis, complex cognitive and continuous learning skills (Jaiswal, Arun & Varma, 2021), and if employees regards AI-M as career opportunity rather than threats (Chang, Abdalla & Lasyoud, 2021). To integrate both previous and recent studies, the current research has critically discussed the characteristics of AI-M and analyzed its positive- and negative-impact on employees, hence contributing to the 'AI-M and employees' literature.

Suggestions and limitation

During the analysis of coping strategies, we recommend a neutralization approach to cope with negative emotion, and our analytic rationale is based on the variance of emotion (Cabral & Almeida, 2020) and its removability (Pankseep, 2005). Nevertheless, adopting a neutralization approach does not eradicate the sources of negative emotion. As long as the sources remain intact, the chance of negative emotion still exists. For the same reason, we therefore encourage managers to pilot AI-M in advance of the full-scale application. By doing so, at least, managers

shall be able to locate the sources of negative emotion more accurately and offer intervention strategies in a timely manner.

The current research does not consider the possibility of positive emotion resulted from AI-M. Our viewpoint is: if AI-M causes positive emotion, both employees, managers and their organizations shall be pleased about it; after all, positive outcomes (such as positive emotion) are generally welcomed in the workplace. From a different but similar perspective, one might assume that negative emotion is only detrimental in the workplace. However, scholars seem to have different views about the function of negative emotion. For example, feelings of shame, guilt, and embarrassment may lead to positive outcomes for employees and organizations, such as better communication between sellers and customers (Kim & Sullivan, 2019) and more organizational citizenship behaviors (Turnipseed & Vandewaa, 2012). Future researchers may conduct new studies, analyzing both positive- and negative-function of negative emotion.

The current research does not consider individual differences during the analysis of emotion-coping. Given that individual differences are crucial in behavior (Gomez-Mejia, Balkin & Cardy, 2008), we recommend future studies to include individual differences as research variables, perhaps by examining the implication of individual differences on emotion-coping. Similarly, the current research does not consider different composition (e.g., nature, elements) of emotional intelligence during the discussion of EI. Whether different composition of EI affects the efficacy of emotion-coping is still unknown. Future research may adopt different emotion models to continue this line of research, such as trait model (Petrides & Furnham, 2001), ability model (Mayer, Salovey & Caruso, 2004) and recognition model (Bänziger, 2014).

References

Bakker, A.B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psycholog*y, *22* (3): 309-328.

Bänziger, T. (2014). Measuring emotion recognition ability. In: Michalos, A.C. (ed.). Encyclopedia of quality of life and well-being research. Dordrecht, Netherland: Springer. pp. 3934-3941. doi:10.1007/978-94-007-0753-5_4188. ISBN 978-9400707535.

Ben Ze'ev, A. (2000). *The subtlety of emotions*. Cambridge, MA: MIT Press.

Brown, J., Ling, T., & Gurdeniz, E. (2017). *Managing next generation of AI in Banking*. New York: Oliver Wyman - Marsh & McLenna.

Bryman, A., & Bell, E. (2006). *Business Research Methods*. Oxford: Oxford University Press. ISBN-13: 978-0199284986.

Cabral, J. C. C., & de Almeida, R. M. M. (2020). From social status to emotions: Asymmetric contests predict emotional responses to victory and defeat. *Emotion*. Online First: https://doi.org/10.1037/emo0000839

Celse, J., Chang, K., Max, S., & Quinton, S. (2016). The reduction of employee lying behavior: Inspiration from a study of envy in part-time employees. *Journal of Strategy and Management*, *9* (2): 118-137.

Chang, K. (2019). *Has the era of artificial intelligence (AI)-driven management arrived yet: The case of Fudan University Student Canteen*. (In Chinese). Fudan Development Institute (FDDI). Shanghai, CHINA: Fudan University.

Chang, K. (2020). Artificial intelligence in personnel management: The development of APM Model. *The Bottom Line*, *33* (4): 377-388.

Chang, K., Abdalla, Y.A., & Lasyoud, A.A. (2021). Artificial intelligence in personnel management: Opportunities and challenges to the Higher Education Sector. (Ref #35). *EAMMIS 2021*. Istanbul, Turkey: Bridges Foundation and Istanbul Medeniyet University.

Chang, K., Kuo, C.C., Su, M., & Taylor, J. (2013). Dis-identification in organization and its role in the workplace. *Industrial Relations*, *68* (3): 479-506.

Chang, K., Max, S., & Celse, J. (2021). Employees' lying behavior and the role of self-awareness. *International Journal of Organizational Analysis.* DOI: 10.1108/IJOA-12-2020-2513.

CIPD (2019). Artificial intelligence and automation in the workplace. London: Chartered Institute of Personnel and Development. (Access: 21st August 2019)

https://www.cipd.co.uk/knowledge/work/technology/emerging-future-work-factsheet

Colman, A. (2008). A dictionary of psychology (3 ed.). Oxford: Oxford University Press.

Duchessi, P., & O'Keefe, R.M. (1995). Understanding expert systems success and failure. *Expert Systems with Applications*, *9* (2): 123-133.

Duchessi, P., O'Keefe, R., & O'Leary, D.E. (1993). A research perspective: AI, management and organizations. *Intelligent Systems*, *2* (3): 151-159.

Elsbach, K. D. (2001). Coping with hybrid organizational identities. In: J. Wagner (Ed). *Advances in Qualitative Organization Research* (Vol 3, pp. 59-90). Oxford: Elservier.

Ernst & Young. (2018). *The new age: Artificial intelligence for human resource opportunities and functions*. London: Ernst & Young LLP.

Frijda, N. H. (1986). *The emotions*. Cambridge: Cambridge University Press.

George, C. (2010). *Psychological contract: Managing and developing professional groups*. Maidenhead, G.B.: Open University Press.

Goldie, P. (2002). Emotions, feelings and intentionality. *Phenomenology and the Cognitive Sciences*, *1* (3): 235-254.

Goleman, D. (1995). *Emotional intelligence: Why it matters more than IQ*. New York: Bantam.

Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books.

Goleman, D., Boyatzis, R., & McKee, A. (2002). *Primal leadership: Realizing the power of emotional intelligence*. Boston: Harvard Business School Press.

Gomez-Mejia, L.R., Balkin, D.B., & Cardy, RL. (2008). *Management: People, performance,*

change (3rd ed.). New York: McGraw-Hill.

Gonzales, M.F., Capman, J.F., Oswald, F.L., Theys, E.R., & Tomczak, D.L. (2019). Where's the I-O? Artificial intelligence and machine learning in talent management systems. *Personnel Assessment and Decision*, *5* (3): 33-44

Grace, K., Salvatier, J., Dafoe, A., Zhang, B., & Evans, O. (2018). *When will AI exceed human performance? Evidence from AI experts*. Oxford: Future of Humanity Institute, Oxford University.

Gross, J. (1998). Antecedent-and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74* (1): 224-237.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85* (2): 348-362.

Haefnera, N., Wincenta, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting & Social Change, 162*. doi: https://doi.org/10.1016/j.techfore.2020.120392

Halperin, E., Canetti-Nisim, D., & Hirsch-Hoefler, S. . (2009). The central role of groupbased hatred as an emotional antecedent of political intolerance: Evidence from israel. *Political Psychology, 30* (1): 93-123.

Harris, I., Jennings, R.C., Pullinger, D., Rogerson, S., *et al*. (2011). Ethical assessment of new technologies: a meta-methodology. *Journal of Information, Communication & Ethics in Society*, *9* (1): 49-64.

Higuera, V., (2018). What you need to know about emotional intelligence. Healthline. (Accessed. 17th December 2020). https://www.healthline.com/health/emotional-intelligence

Huang, M. H., & Rust, R. T. (2018). AI in service. *Journal of Service Research*, *21* (2): 155-172.

Itegboje, J., & Chang, K. (2021). Agency workers and their equivocal roles – Wandering

employees. *Labor History*, *62* (2): 115-133.

Jaiswal, A., & Arun, C.J. (2021). Potential of artificial intelligence for transformation of the education system. *International Journal of Education and Development*, *17*(1): 142-158

Jaiswal, A., Arun, C.J., & Varma, A. (2021). Rebooting employees: upskilling for artificial intelligence in multinational corporations. *International Journal of Human Resource Management*. DOI: 10.1080/09585192.2021.1891114

Jordan, H. (2019). The line manager's role in mental wellbeing. *HR Magazine*. (Aug ed). London: MAG.

Kaushik, S. (2011). *Artificial Intelligence*. Delhi, India: Cengage Learning.

Keystone Consulting. (2017). *Big-Data and its role on the efficacy of human resource management*. Investigative Report. Shanghai, CHINA: Keystone Consulting Ltd.

Kim, Y.K., & Sullivan, P. (2019). Emotional branding speaks to consumers' heart: the case of fashion brands. *Fashion and Textiles*, *6* (2): 1-16.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of emotion definitions, with a suggestion for a consensual definition. *Motivation and Emotion, 5* (4): 345-371.

Kolbjornsrud, V., Amico, R., & Thomas, R.J. (2016). *The promise of artificial intelligence: Redefining management in the workplace of the future*. New York: Accenture Institute for High Performance.

Kuo, C.C., & Chang, K. (2021). *Relational-contract: The secret of career success*. Sharjah: University of Sharjah's Institutional Repository. Reference: 101866-01.

Kuo, C.C., Chang, K., Kuo, T.K., & Chen, S. (2020). Workplace gossip and employee cynicism: The moderating role of dispositional envy. *Chinese Journal of Psychology*, *62* (4): 537-552.

Kuo, C.C., & Chang, K. (2021). Machiavellianism, workplace envy, and their impact at work. *Chinese Journal of Psychology*, *63* (1): 99-120.

Lampert, K., & Phelps, E. A. (2013). Neuroeconomics of emotion and decision making. In P. Glimcher & E. Fehr (Eds.), *Neuroeconomics: Decision Making and the Brain* (pp. 219-236).

London: Academic Press.

Lazarus, R.S. (1991). *Emotion and adaptation*. New York: Oxford University Press. ISBN 978-0195092660.

Lazarus, R. S. (1998). *Fifty years of the research and theory of R. S. Lazarus: An analysis of historical and perennial issues*. Mahwah, N.J.: LEA. ISBN 978-0805826579

Lazarus, R. S. (2001). Relational meaning and discrete emotions. In: K. R. Scherer., A. Schorr., & T. Johnstone. (Eds.), *Series in affective science. Appraisal processes in emotion: Theory, methods, research.* (p. 37-67). Oxford: Oxford University Press.

Macey, W., & Scgeneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, *1* (1): 3-30

MacCann, C., Joseph, D.L., Newman, D.A., & Roberts, R.D. (2014). Emotional intelligence is a second-stratum factor of intelligence: evidence from hierarchical and bifactor models. Emotion, *14* (2): 358-374.

Malik, A., Budhwar, P., Srikanth, NR & Varma, A. (2019). May the bots be with you! Opportunities and challenges of artificial intelligence for rethinking human resource management practices. *Annual Conference, British Academy of Management*.

Mathis, R.L., Jackson, J.H., Valentine, S.R., & Meglich, P. (2017). *Human resource management* (15th edn). London: CENGAGE Learning.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27* (4): 267-298.

Mayer, J.D., Salovey, P., & Caruso, D.R. (2004). Emotional intelligence: Theory, findings, and implications. *Psychological Inquiry*, *15* (3): 197-215.

McCloy, R.A., Purl,J.D., & Banjanovic, E.S. (2019). Turnover modeling and event history analysis. *Industrial and Organizational Psychology*, *12* (3): 320-325.

McKinney, S.M., Sieniek, M., Shetty, S., (2020). International evaluation of an AI system for breast cancer screening. *Nature*, *577* (1): 89-94.

Morgan, D.L. (1996). Focus groups. *Annual Review of Sociology*, *22* (1): 129-152.

Mullins, L.J. (2016). *Management and organizational behavior*. (11th ed.). Essex, England: Pearson.

O'Leary, D.E. (1993). The impact of manager philosophy on knowledge management systems. *Intelligent Systems*, *17* (2): 111-126.

Ortony, A., Clore, G. L., & Collins, A. (1988). The cognitive structure of emotions. New York, NY: Cambridge University Press.

Pan, Y., Froese, F., Liu, N., Hu, Y.Y., & Ye, M. (2021). The adoption of artificial intelligence in employee recruitment: The influence of contextual factors. *International Journal of Human Resource Management*. DOI: 10.1080/09585192.2021.1879206

Panksepp, J. (2005). *Affective neuroscience: The foundations of human and animal emotions*. Oxford: Oxford University Press. p. 9. ISBN: 978-0-19-509673-6.

Petrides, K.V., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation to established trait taxonomies. *European Journal of Personality*, *15* (6): 425-448.

Prinz, J. (2004). *Gut reactions: A perceptual theory of emotion*. New York: OUP.

Pugmire, D. (1998). Rediscovering emotion. Edinburgh: Edinburgh University Press. ISBN: 0748611266.

Robert, D., & Davenport, T. O. (2002). Job engagement: Why it's important and how to improve it. *Employment Relations*, *29* (3): 21-29.

Robbins, S.P., & Judge, T. (2012). *Organizational behavior*. (15th ed). London: Pearson.

Robson Jr, J.P., & Troutman-Jordan, M. (2014). A concept analysis of cognitive reframing. *Journal of Theory Construction and Testing*, *18* (2): 55-59.

Rousseau, D.M. (1989). Psychological and implied contracts in organizations. *Employee Responsibilities and Rights Journal*, *2* (2): 121-139.

Scherer, K.R. (2005). What are emotions? And how can they be measured? *Social Science Information*, *44* (4): 693-727.

Schwartz, B. &. Reisberg, D. (1991). *Learning and Memory*. New York: Notron.

Spurthis, K. (2018). *AI versus Humans*. ATG World. (Accessed: 25 May 2019)

   https://www.atg.world/view-article/AI%20versus%20Humans-26011

Stoltz, P. G. (1997). *Adversity quotient: Turning obstacles into opportunities.* Canada: John

   Willey and Sons, Inc.

Stoltz, P. G. (2002). *Adversity quotient at work: Finding your hidden capacity for getting things

   done*. New York: Harper Collins.

Tsohou, A., M. Karyda, S. Kokolakis., *et al*. (2015). Managing the introduction of information

   security awareness programms in organizations. *European Journal of Information Systems*, *24*

   (1): 38-58.

Tsaousis, I., & Nikolaou, I. (2005). Exploring the relationship of emotional intelligence with

   physical and psychological health functioning. *Stress and Health, 21* (2): 77-86.

Tuli, S., Gill, S.S., Xu, M., et al. (2022). HUNTER: AI based holistic resource management for

   sustainable cloud computing. *Journal of Systems and Software*, *184*(2022), 111-124

Turkkan, J.S. (1989). Classical conditioning: The new hegemony. *Behavioral and Brain Sciences*,

   12 (1): 121-179.

Turner, N., Barling, J., & Zacharatos, A. (2002). Positive psychology at work. In: C. R. Snyder &

   Shane J. Lopez (Eds.), *The Handbook of Positive Psychology* (pp. 715-726). New York:

   Oxford University Press.

Turnipseed, D.L., & Vandewaa, E. (2012). Relationship between emotional intelligence and

   organizational citizenship behavior. *Psychological Reports*, *110* (3): 899-914.

Viney, R.,. & Mckimm, J. (2010). Mentoring. *British Journal of Hospital Medicine*, *71*(2): 106-109.

Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2021). Artificial

   intelligence, robotics, advanced technologies and human resource management: a systematic

   review. *International Journal of Human Resource Management*. DOI:

   10.1080/09585192.2020.1871398.

Wang, Z.Z., & Nie, R. (2018). The effect of health quotient management within the interaction

model of client health behavior on maternal health outcome. *Proceedings of the ICMESS*.

https://www.atlantis-press.com/proceedings/icmess-18

Wang, A.M., Wang, T.L., & Huang, C.J. (2017). *BigData on human resource management:*

Model, theory and application. Beijing, CHINA: Tsinghua University Press.

Wills, T.A., & Isasi, C.R. (2007). Buffering effect. In: R.F. Baumeister & & K.D. Vohs (Eds.).

Encyclopedia of Social Psychology. London: Sage. ISBN:9781412916707

Wisskirchen, G., Biacabe, B.T., Bormann, U., Muntz, A., *et al*. (2017). *Artificial intelligence and*

robotics and their impact on the workplace. London: IBA Global Employment Institute.

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Table I

Potential triggers of negative emotion

Viewpoints	Manifestation	Core relational themes[†]
Employee's viewpoints	AI-M may imply triggers of negative emotion at the individual level:	
	• AI has an ability to replace human labor in mechanical and routine tasks of a job, such as manual and non-heuristic duties.	Fear, Anger
	• AI-M implies the likelihood of job-replacement, in which employees may develop concerns about their job security and career development opportunity, leading to the negative feeling about AI-M.	Fear, Disgust
	• Negative feeling in the workplace (e.g., job insecurity, limited career opportunity) may cause poor job satisfaction and deteriorated well-being.	Fear, Anger, Sadness
Manager's viewpoints	AI-M may imply triggers of negative at the managers' level:	
	• AI has an ability to take over the ownership and responsibility of decision-making in managerial policies and practices.	Disgust, Sadness
	• AI may compromise managers' job roles and affect their influence in the teams, groups and the organization.	Fear, Anger, Sadness
	• AI acts as career threat rather than opportunity in the eyes of some managers.	Fear, Disgust

Note. AI = Artificial intelligence; AI-M = AI-driven management.

[†]. The core relational themes are proposed by the Appraisal Theory (Lazarus, 1991 & 1998), including: Anger (a demeaning offense against me and mine), Fear (facing an immediate, concrete, and overwhelming physical danger), Sadness (having experienced an irrevocable loss), Disgust (taking in or being too close to an indigestible object or idea) and Happiness (making reasonable progress toward the realization of a goal).

Table II

Summary of employee's and manager's strategies

Level	Manifestation
Employee's strategies	• *Cognitive reframing*: This is a psychological tactic that trains people to think differently about the challenge(s) that they cannot actually change. If AI-M implies some negative impact in the workplace, individuals may find out its potential benefit and maximize such benefit. • *Classical conditioning process*: When two things generally occur together, encountering one can bring the other to mind; when the association is established, people tend to interpret such association more neutrally. When employees are told what problems (such as AI-M's side-effect) might come, they would feel more confident and better-prepared in coping with the problems. • *Positive reinforcement*: Behavior can be strengthened through positive reinforcement when something desirable occurs following the behavior. When employees understand the potential of AI and receive its benefits, they are more willing to interact with AI. When employees have more experience in interacting with AI, they are more likely to develop their confidence of applying AI into their job duties.
Manager's strategies	• *Focus-group scheme*: First, prior to the implementation of AI-M, focus-groups help managers to evaluate the readiness of their employees for AI-M, in which managers can provide further information and support, guiding their employees to prepare for the potential impact of AI-M. Second, during the implementation of AI-M, managers may use focus-groups to collect feedback from the employees, monitoring the progress of AI-M from employees' perspectives. • *Mentor-mentee scheme*: During the implementation of AI-M, managers may provide a clear framework that outlines the details of mentor-mentee schemes, such as duties of mentors and mentees, frequency and duration of

mentoring meetings. A clear framework helps both mentors and mentees appreciate their respective roles during the mentoring activities, facilitating the effectiveness of schemes. With the support from the mentor-mentee schemes, mentees can cope with AI-M's influence more effectively.

- *Pilot scheme*: With a sensible pilot scheme in place, managers are able to estimate whether AI-M generates subtle impact on their workforce, business operations or any other aspects of the organization. Pilot schemes also offer a chance of *trial-and-error*, enabling managers to find out the best way to reach a desired result and understand the best applicability of AI-M.

Note. AI = Artificial intelligence; AI-M = AI-driven management.