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## **High-performance work systems, psychological capital and future time perspective: a cross-nations study**

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**Abstract:** This study explores central questions related to the connections between a firm's High-Performance Work System (HPWS) and its ability to foster the positive employee outcomes, Psychological Capital (PsyCap) and Future Time Perspective (FTP). Drawing on signalling theory, this paper develops and examines two mediation models. In the first, FTP is proposed as mediating the HPWS-PsyCap relationship; and in the second, PsyCap is proposed as mediating the HPWS-FTP link. Self-reported survey data was collected from bank employees in Cyprus, Turkey and the United Arab Emirates (UAE). Results from Partial Least Square Structural Equation Modelling (PLS-SEM) revealed that HPWS exerts a positive influence on FTP and PsyCap. The mediation effects hold for all the countries. Deploying signalling theory enriches our understanding of organisational HRM practices and their possible impact on employees. Implications for practice and research are highlighted.

**Keywords:** work practices; hope; optimism; resilience; self-efficacy; future time perspective.

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## **1 Introduction**

A growing body of theoretical and empirical research provides evidence of the value of High-Performance Work System (HPWS) in helping organisations achieve their performance objectives (Arthur, 1994; Huselid, 1995; Macky and Boxall, 2007). The common definition of HPWS is a system of managerial practice that increases the empowerment of employees and enhances the skills and incentives that enable and motivate them to take advantage of this greater empowerment (Macky and Boxall, 2007). Previous research has suggested that HPWS involves a set of practices such as rigorous

and selective staffing, extensive training and development, merit-based performance, objective performance appraisal, competitive compensation, and employee participation (e.g., Datta et al., 2005; Huselid, 1995; Way, 2002; Takeuchi et al., 2007; Shin and Konrad, 2017). This definition is consistent with many theories that are used in the literature to link HPWS with performance. The most common theories include the resource-based and behavioural theories (Shin and Konard, 2017).

According to the Resource-Based View (RBV), Human Resources (HR) can be seen as potential sources of competitive advantage that can create value for the organisation (Barney, 1991). HPWS adoption is therefore important as it invests in the human capital that creates value and improves organisational performance. Further, the implementation of HPWS improves an organisation's position in the market as well as its ability to respond to change which can affect the overall performance in unexpected scenarios (Alatailat et al., 2019; Prince, 2019). Behavioural theory, on the other hand, suggests that HPWS encourages employees to engage in productive behaviour. Both theories employ the AMO model adopted by Applebaum et al. (2000) that promotes high performance. This view is consistent with the argument that HPWS is an important investment which creates value through HR, improving employees' ability, motivation, and opportunity to participate in the organisation (e.g., Boxall et al., 2008; Delery and Shaw, 2001; Gerhart, 2007; Katz and Shapiro, 1985; Lepak et al., 2006; Takeuchi et al., 2007).

Consistent with previous theories supporting the concept of the HPWS-performance link, social exchange theory explains the value of HPWS in encouraging employees to identify with organisational goals and to work towards achieving them (Chang and Chen, 2011). In particular, social exchange theory posits that the exchanges between social partners (i.e., organisation and employees) consist of a series of interactions that generate the obligation to reciprocate (Blau, 1964). Accordingly, HR practices in HPWS can be viewed by employees as beneficial to them, encouraging them to reciprocate with effective attitudes and behaviours valued by the organisation. Social exchange theory has been employed in previous research into the value of HPWS to improve performance-related outcomes (e.g., Kroon et al., 2009; Zhang and Li, 2009; Zhang et al., 2013).

From the above discussion, it can be seen that the HR and work practices embedded in HPWS affect performance at several levels (Lepak et al., 2006; Boxall et al., 2008). At the collectivist level, HPWS can influence many variables at the higher organisational level, helping to build organisational capabilities and improve performance, and influencing the social and psychological climate in which individuals are embedded (e.g., Evans and Davis, 2005). At the individual level, behavioural theory posits that HPWS influences employees' Abilities (A), Motivations (M) and Opportunities (O) to perform (Aktar et al., 1995). Previous studies focused on how HPWS affects firm-level outcomes, but recently more interest has been shown in how the individual level is affected by HPWS (Andersén and Andersén, 2019). In other words, practices included in HPWS impact on the skills and knowledge of individual employees, their willingness to exert effort, and their opportunities to express their talents in their work.

While extensive previous research has focused attention on providing empirical validation of the value of HPWS in improving organisational-level performance (see Guest et al., 2003; Namasivayam et al., 2007 for review), few studies have examined the effects of HPWS on employee psychology-related outcomes (Miao et al., 2020).

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There is still no clear understanding of how employees' assessment of the Human Resources management (HRM) system adopted at the organisational level can influence outcomes at the individual level (Korff et al., 2017). This narrow view implies that more attention is being paid to improving the efficiency and effectiveness of HR practices at the organisational level to achieve organisational economic goals, while ignoring the effect of these practices on employee-related outcomes (Zhang et al., 2013). For this reason, some authors are calling for a more balanced approach by concentrating on employees in HPWS research to explain how HRM relates to different organisational outcomes ranging from HR (individual level) to finance (organisational level) (Pauwee, 2009; Jiang et al., 2012).

#### *1.1 Contribution of the study*

Responding to previous calls (Abubakar et al., 2019; Delbridge and Keenoy, 2010), this study sets out to close a gap in HPWS research by examining two important but neglected individual-level outcomes of HPWS, Psychological Capital (PsyCap) and Future Time Perspectives (FTP), in this case in the banking industry in three different contexts: Turkey, Cyprus and the UAE. The study thus has three main purposes. First, it tests the impact of HPWS on PsyCap. PsyCap is rarely examined in the literature, and specifically in the banking sector, although it is one possible individual-level outcome that could be improved through the adoption of HPWS. The concept of positive psychology has emerged to reinforce the idea that a set of psychological resources can shape an employee's attitudes and can lead to a desirable outcome (Schulz and Brender-Ilan, 2004). PsyCap represents an individual's psychological state of development and comprises four positive resources; (1) self-efficacy; (2) optimism; (3) hope and (4) resilience (Luthans et al., 2007).

Organisations today are increasingly recognising the importance of positivity and concentrating on developing employee strengths. Positive psychology (and in particular PsyCap) has great potential and is taking part in HR-related outcomes. HPWS encourages positive exchanges between employee and employer, closely related to employees' feelings of perceived organisational support and strengthening their PsyCap. Building on signalling theory, HPWS indicates to employees that the organisation views them as a strategic resource, investing in their development, recognising their contribution, and caring for their well-being (Chuang and Liao, 2010). Thus, HPWS is linked to PsyCap.

Secondly, the study examines the impact of HPWS on FTP. FTP is a cognitive-motivational and flexible construct conceptualised as "the totality of the individual's view of his psychological future and psychological past" (Lewin, 1951, p.75). It relates to people's beliefs and perceptions of how much time is left in their future life (Cate and John, 2007; Carstensen, 2006). Drawing on social exchange theory (Cropanzano and Mitchell, 2005) and signalling theory (Connelly et al., 2011), HRM systems are perceived and evaluated by employees to assess their future prospects, which can affect their attitudes to work within the organisation (Korff et al., 2017). HPWS and its practices can improve employees' FTP through strengthening their socio-emotional resources such as status, affiliation and information (Armeli et al., 1998; Korff et al., 2017). Thus, we propose a positive link between HPWS and FTP.

Thirdly, by integrating PsyCap and FTP in our research model, we examine two possible paths for a mediation relationship, both the mediating effect of FTP on the link between HPWS and PsyCap and the mediating role of PsyCap on the HPWS-FTP link. To the best of our knowledge, no empirical research has examined these two-way mediation effects. Therefore, this study introduces two contrasting mechanisms to explain the effect of HPWS on both PsyCap and FTP causal chains. Two scenarios test our proposed model in the banking sector of three countries; banking is a key sector that supports national development and employs large numbers of workers (Taamneh et al., 2018). More specifically, the first scenario tests whether FTP mediates the relationship between HPWS and PsyCap, and the second whether PsyCap mediates the relationship between HPWS and FTP. These hypothesised relationships are tested in the banking industry of three different countries: Turkey, Cyprus and the UAE. This type of cross-national research in management is of theoretical importance as well as of practical significance (Kraut, 1975). In sum, employees' perceptions in different cultural contexts may uncover similarities and differences and thus have important implications for managers in these countries (Budhwar and Sparrow, 2002).

## **2 Theoretical framework and hypotheses**

### *2.1 Signalling theory*

HPWS plays a critical role in signalling what is expected, supported, and rewarded by the employing organisation. The central tenets of signalling theory describe the behaviour of two parties (i.e., individuals and organisations) in communication information: the sender (organisation) decides whether and how to communicate (or signal) information, and the other party, the receiver, must choose how to interpret the signal (Connelly et al., 2011). Evaluations and assessments of HPWS tend to be subjective; however, positive evaluation implies an open and hopeful future, alleviates the perception of constraints, and evokes expectations characterised by future possibilities and opportunities that encourage employees to make future plans, solve and overcome problems, and also set new goals, all of which have been proved to boost employees' job satisfaction, organisational and job performance, affective commitment, citizenship behaviour and helping behaviour (Connelly et al., 2011; Mostafa and Gould-Williams, 2014; Chuang and Liao, 2010).

According to signalling theory, workers look for and evaluate management and HR signals (Connelly et al., 2011). The reception of these signals may influence the individual's assessment of FTP (i.e., feelings about life and the future as a function of work); and may also elevate PsyCap (i.e., hope, optimism, resilience, and self-efficacy). Closing the "HPWS gap" is an important managerial issue with broad socio-economic implications, particularly for bank and financial enterprises who rely heavily on service components. This study responds to the call for research by Abubakar et al. (2019) on the impact of HPWS on positivity ambassadors such as FTP and PsyCap. Kim et al. (2018) also encouraged researchers to propose and test more antecedents of positive organisational behaviour such as FTP and PsyCap.

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HPWS is a system of interconnected HR practices that subsumes participation, empowerment, decision making, training and promotional opportunities and is designed to attract, recruit, select, manage, and retain the best human capital (Lepak et al., 2006). It is regarded as a tool to improve employee motivation, competence, competitiveness and performance (Fu et al., 2015). HR practices include managements “signals” that communicate the organisation’s policies, expectations, and intentions towards employees. For example, training signals are the “organisation’s willingness to invest in their employees and promotion opportunities indicating that the organisation values employees’ contributions” (Ostroff and Bowen, 2000; Elrehail et al., 2020). Appraisal/performance feedback and career opportunities signal to employees that the organisation is concerned and interested in improving their abilities and skills and investing in their development (Elrehail et al., 2021).

PsyCap refers to “one’s positive appraisal of circumstances and probability for success based on motivated effort and perseverance” (Luthans et al., 2007, p.550). PsyCap was conceptualised as a reflective construct comprising self-efficacy, optimism, hope and resilience (Luthans et al., 2008). Hope depicts the determination to achieve goals and success, and self-efficacy the confidence and willingness to make efforts towards accomplishing challenging goals; optimism depicts a positive attitude to present and future success, while resilience is perseverance in overwhelming and difficult situations (Luthans et al., 2007). A positive link between integrated HR practices and PsyCap has been identified (Chen et al., 2016b), and researchers suggest that such practices can boost an employee’s PsyCap by activating cognitive and motivational resources (Lepak et al., 2006; Luthans et al., 2010).

Many components of HPWS support signalling theory. For example, selection and recruitment processes are conceived as a signal indicating that the organisation appreciates industry knowledge and experience. Training and development activate learning and signal organisations’ willingness to invest in their staff (Miao et al., 2020). Monetary and non-monetary appraisals and incentives such as internal promotion, bonuses and fringe benefits may be viewed as an indication of future status and benefits. Participation programs, empowerment, job security, flexible working hours, mobility, and training result in the development of desirable skills and problem-solving ability (Hennessey and Amabile, 2010; Sun et al., 2007; Fu and Ma, 2015; Patel et al., 2016).

Previous studies have focused on the expected organisational-level outcomes of HPWS and how it will generate favourable workplace conditions that will increase the productivity of employees by developing their PsyCap. Nevertheless, PsyCap is closer to individual work attitudes (Miao et al., 2014), and could be encouraged through HR procedures and their intervention (Chen et al., 2021). For example, interaction with employees through appraisal and training programs will enhance their ability to learn and communicate with co-workers, building up their self-efficacy, optimism, resilience and hope.

Business-related information sharing generates greater clarity about job roles (Wood and de Menezes, 2011) and organisational objectives, and reduces uncertainty in the work environment (Huang et al., 2015, 2016). Other activities such as newsletters, yearly reports and meetings signal the organisation’s appreciation of the workers’ contribution.



These practices are likely both to spur and shape individuals' psychological outlook. This paper argues that HPWS can transform employees into confident, skilful and optimistic individuals. Thus, we propose that:

*Hypothesis 1: High-performance work systems positively affect employees' psychological capital.*

### *2.3 High-performance work system and future time perspective*

FTP is a cognitive and motivational variable that deals with the subjective sense of future time and what is likely to take place in that future (Carstensen, 2006). Employees' FTP plays a significant role in their well-being and in organisational productivity, because it represents their individual cognitive interpretation of future goals and present tasks (Abubakar et al., 2019). FTP is also known as the Occupational Future Time Perspective (OFTP) (Zacher and Frese, 2009), seen as the perception of the remaining time at work and the remaining opportunities. Most scholars agree on the double nature of FTP: feelings about life and future (e.g., Carstensen and Lang, 1996; Jung et al., 2015), although Kuppelwieser and Sarstedt (2014) re-conceptualised it with three dimensions: focus on opportunities, focus on life, and focus on time. The common theme linking these approaches is the present and the future.

Cate and John (2007) described FTP as individuals' perception of how much time they have for future opportunities. Individuals with positive assessments of life and the future can focus on setting goals, developing plans and evaluating sets of options to follow in their remaining lifetime. Zimbardo and Boyd (2015) defined the time perspective as the "often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or timeframes, that help to give order, coherence and meaning to those events". Consistent with signalling theory (Connelly et al., 2011), FTP relies on appropriate documentation and information from the sender. HR practices are deemed as signals which employees perceive and evaluate to make sense of their work environment and situation (Bowen and Ostroff, 2000). For instance, job applicants make use of signals from recruiters to evaluate the quality of organisations.

Employees also receive promotional and incentive signals from their employer which enable them to evaluate the quality of welfare offered; for example, mobility, job security, holiday package, pension plan, type of health insurance and performance appraisals. Some studies have found that FTP is associated with positive consequences such as career success, academic performance, self-control and career decisions (Barnett et al., 2020; Dreves and Blackhart, 2019; Park et al., 2018, 2020). It seems likely that such interpretations will influence employees' sense of their own future prospects. HR practices include situational factors that can affect FTP (Zacher and Frese, 2009); for instance, HPWS boosts employees' well-being and happiness and reduces anxiety (Wood and de Menezes, 2011). Hallmarks of HPWS such as training and development, transparent communication, job security, empowerment, mobility, autonomy and information sharing can also boost employees' positive psychology (Agarwal and Farndale, 2017), in turn stimulating future life evaluations. More specifically, this paper

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argues that HPWS paves the way for positive appraisal of situations and the probability of success, which may subsequently improve FTP. Thus, we propose that:

*Hypothesis 2: High-performance work systems positively affect employees' future time perspective.*

#### *2.4 Future time perspective and psychological capital*

FTP as a psychological characteristic refers to an individual's mental representation of the future (Walker and Tracy, 2012), helping employees to regulate, monitor and evaluate their performance in accordance with their goals (Husman and Shell, 2008). In addition to helping them to pursue their future goals (Park and Jung, 2004), FTP encourages them to value their current job as a means of acquiring skills, knowledge and job experience. Individuals' perception of the remaining time and opportunities in their careers will affect motivation, performance and the type of goals they pursue at work (Henry et al., 2017).

Researchers have identified positive relationships between occupational FTP and future outcomes (Rudolph et al., 2018) and employees' well-being (Cunningham et al., 2015). Workers with a higher FTP score have more confidence in attaining their future aims (Cenciotti et al., 2017; Lam et al., 2019); they are more optimistic and anticipate positive outcomes (Drake et al., 2008). They see the importance of future goals and try harder to develop the skills needed to accomplish their goals; consequently, the acquisition of new knowledge or skills leads to the development of their self-efficacy (Walker and Tracy, 2012).

Regarding motivational outcomes, FTP and intention (Chen et al., 2016) to continue working (Henry et al., 2017) have a positive association. Additionally, level of happiness (Cunningham et al., 2015), occupational well-being, organisational commitment, and behavioural and attitudinal outcomes such as occupational self-efficacy are positively associated with FTP (Henry et al., 2017). Thus, future-oriented persons have a feeling for life and the future; they develop better work attitudes, well-being, happiness, greater self-efficacy and persistency in overcoming hardship and stress in their workplace. This paper proposes that positive perception of the future can improve personal PsyCap.

*Hypothesis 3: Future time perspective positively affects employees' psychological capital.*

#### *2.5 Psychological capital and future time perspective*

The research stream on PsyCap indicates a significant positive relationship between PsyCap and employees' attitude (i.e., organisational commitment, job satisfaction, and psychological well-being), their behaviours (i.e., citizenship) and performance (i.e., supervisor evaluation, creative tasks), (Avey et al., 2011). Workers with greater PsyCap are likely to try harder to achieve their goals, resulting in increased performance over time. One reason is that these workers believe themselves capable of achieving their goals; they have the willpower to find solutions to problems (hope), a positive

perspective about future results (optimism) and perseverance in the face of setbacks (resilience). They can innovate and make their lives more enjoyable, improve their ability to predict their future (Schuckert et al., 2018).

Overall, PsyCap improves employee well-being, happiness, creativity, and facilitates building physical, cognitive and social resources (Avey et al., 2011). Moreover, workers with high level of PsyCap In motivating employees to successfully accomplish tasks, PsyCap is a facet of FTP. "Future-oriented" individuals are more optimistic and anticipate positive outcomes. Thus, employees with greater PsyCap as a personal resource are hopeful and confident about their career, persistent in achieving future goals and have more confidence and motivation in building a positive future (Wood and Bandura, 1989) and FTP. Therefore, based on the above reasoning, we believe that more hope, self-efficacy, optimism and persistence employees will affect their degree of FTP.

*Hypothesis 4: Psychological capital positively affects employees' future time perspective.*

## *2.6 Mediating role of future time perspective and mediating role of psychological capital*

Studies suggest that HRM practices play a significant role in the subsequent formation of attitudes to work (Korff et al., 2017); they enhance psychological resources (Agarwal and Farndale, 2017) and inspire positive evaluation of situations (Fabi et al., 2015). Human resource practices are intended to align the employees' values and goals with the organisation's objectives, and direct their discretionary efforts, productivity and creativity (Lepak et al., 2006). Consistent with social exchange theory that explains exchanges between social partners as sequences of interactions which provoke obligations to reciprocate (Cropanzano and Mitchell, 2005), an organisation's HRM system facilitates social interaction between organisations and employees. This is implemented as individuals pursuing psychological goals (Carstensen, 1993); employers address employees' motives and expectations, reciprocated as the predicted opportunities, possibilities and new goals that are features of employees' FTP. Likewise, HRM can enhance employees' self-esteem (Spreitzer, 1995) and is related to positive expectations for themselves and their future (Taylor and Brown, 1988).

Meanwhile, according to signalling theory, potential receivers such as employees look for relevant signals (i.e., HRM practice), translating and interpreting them; these signals will affect employees' sense of their own future prospects as facets of their FTP. HPWS signals as a resource gain can influence employees' goals and coping strategy (Aspinwall, 2005). Hence, it is possible to suppose that employees perceive an organisation's HRM system as signals of the organisation's intentions which they interpret to match their own situations and opportunities. Overall, HPWS inspires positive evaluation of situations and promotes PsyCap (Fabi et al., 2015) and a positive attitude toward life and the future. It seems likely that this strengthening of employees' resources will be mirrored in their FTP.

Workers' attitude has an important role in the relationship between HRM and the employees' behaviours and motivations. Individuals with more FTP are inclined to pursue goals more hopefully and optimistically. These affective reactions that precede attitudes are the results of appraisal of work events, influenced by individuals' goals, future perception hope. Accordingly, we propose that HPWS endorses employees'

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psychological resources via FTP. Similarly, HPWS influences employees' goal setting and FTP through greater psychological resources. Thus, it is proposed that:

*Hypothesis 5: The relationship between high-performance work systems and future time perspective will be mediated by psychological capital.*

*Hypothesis 6: The relationship between high-performance work systems and psychological capital will be mediated by future time perspective.*

## **3 Methods and materials**

### *3.1 Measures*

Twenty-seven items were presented to determine a high-performance work system, adopted from Sun et al. (2007), with sample items including "Employees in this job are often asked by their supervisor to participate in decisions". The four first-order psychological capital constructs (self-efficacy, optimism, hope and resilience) were measured with 24 items from Luthans et al. (2008). Items include "Many opportunities await me in the future". The two first-order future time perspective constructs, feelings about life and feelings about the future, were measured with 11 items (Lang and Carstensen, 2002). Response choices for the constructs under investigation were anchored on a 5-point scale (1-strongly disagree to 5-strongly agree).

### *3.2 Sampling and procedure*

The study survey was developed in English and subsequently back-translated into Turkish and Arabic by linguistic experts. Pre-test studies were conducted, and after a series of revisions following the recommendations of four professors and four psychologists, the final version of the survey emerged. It was administered to commercial bank employees in Cyprus, Turkey and the UAE. The banks were selected based on their size and the number of customers; the respondents were randomly approached, such that all individuals had an equal chance of being chosen. Social desirability is the tendency of respondents to behave in a culturally acceptable and appropriate manner. The front page of the survey had brief information emphasising the voluntary nature of the study and that responses would be confidential. Podsakoff et al. (2003) suggested that "assuring respondent anonymity will likely reduce the potential of CMV. Assuring confidentiality and anonymity can reduce respondents' evaluation apprehension and tendency to edit their responses to be more socially desirable. Psychological methods were used to make it appear that the predictor variable was not related to the response variables.

### *3.3 Demographics*

The demographic breakdown of the samples under investigation is presented in Table 1.

**Table 1** Respondents' profile

	<i>UAE sample</i>	<i>Turkey sample</i>	<i>Cyprus sample</i>
	<i>#(%)</i>	<i>#(%)</i>	<i>#(%)</i>
<i>Gender</i>			
Male	147(69.3)	185 (61.3)	175 (56.6)
Female	65 (30.7)	117 (38.7)	134 (43.4)
Total	212 (100.0)	302 (100.0)	309 (100.0)
<i>Age</i>			
21–30	71 (33.5)	112 (37.1)	111 (35.9)
31–40	81 (38.2)	89(29.5)	89 (28.8)
41–50	45 (21.2)	63 (20.9)	75 (24.3)
Above 50	15 (7.1)	38(12.6)	34 (11.0)
Total	212 (100.0)	302 (100.0)	309 (100.0)
<i>Marital status</i>			
Single	72 (34.0)	101 (33.4)	96 (31.1)
Married	140 (66.0)	201 (66.6)	213 (68.9)
Total	212 (100.0)	302 (100.0)	309 (100.0)
<i>Income in USD</i>			
Below 1000	67 (31.6)	110 (36.5)	174 (56.3)
1000 - 1500	53 (25.0)	152 (50.3)	110 (35.6)
Over 1500	92 (43.4)	40 (13.2)	25 (8.1)
Total	212 (100.0)	302 (100.0)	309 (100.0)
<i>Education</i>			
High school	6 (2.8)	21 (7.0)	35 (11.3)
Some college degree	27 (12.7)	32 (10.6)	50 (16.2)
Bachelor's degree	109 (51.4)	193 (63.9)	169 (54.7)
Higher degree	70 (33.0)	56 (18.5)	55 (17.8)
Total	212 (100.0)	302 (100.0)	309 (100.0)

Note: USD, American Dollar, #, Frequency; %, Percentage

#### 4 Data analysis

This study uses Partial Least Square-Structural Equation Modelling (PLS-SEM) for data analysis and hypothesis testing. It has several advantages over other SEM approaches. First, as the objectives of the study are to assess a set of predictive relationships between HPWS, PSYCAP and FTP, PLS-SEM offers a powerful approach that relies on regression and uses the idea of “variance explained” to comprehend the association between the model and the data (Hair et al., 2011; Henseler et al., 2016; Petter, 2018). Second, this study involves a complex framework that contains many constructs and items, and that proposes complex relationships between the constructs through a mediator. PLS-SEM has indeed no restriction on the number of items used per construct

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(Hair et al., 2011). Moreover, the bootstrapping procedures used by PLS are well-matched with the bootstrapping strategy used for testing a mediating effect (Nitzl et al., 2016), as recommended by Preacher and Hayes (2008). These properties of PLS make it the best choice for data analysis in this study. We assessed both the measurement and the structural models of PLS-SEM separately for each country's data set.

#### *4.1 Assessment of the measurement model*

The main variables HPWS, PSYCAP, and FTP are conceptualised at a high order level (second-order constructs). In line with Wetzels et al. (2009), we first assessed the quality of the properties of the first-order constructs. All of the first-order constructs in this study are reflective measures, as suggested in the literature. We verified the reliability and validity of the first-order constructs for all three data sets. In terms of reliability, we removed any item with a loading of less than 0.4 (Hair et al., 2011). We also dropped any item with a loading of less than 0.7 if its removal helped the composite reliability and convergent validity to reach the traditional thresholds (Hair et al., 2011). In the case of a particular item not meeting these criteria in any one data set, we removed it altogether to maintain consistency across the three data sets.

As shown in Table 2, the subsequent estimations for the retained factors structure indicate satisfactory reliability for all first-order constructs in all data sets. The composite reliability of all first-order constructs exceeded the threshold of 0.7 across all data sets. The results also showed a great deal of convergent validity as the Average Variance Extracted (AVE) values were well above the cut-off value of 0.5 in all data sets. We also employed the square root of the AVE (also known as the Fornell-Larcker Criterion) and items' cross-loading to examine the discriminant validity of the first-order constructs. The results in Tables 3, 4 and 5 show that the square root of the AVE of the constructs was greater than the intercorrelations between constructs in every case, confirming discriminant validity (Fornell and Larcker, 1981). As for the cross-loading test, the results show that all items display a higher loading on their own constructs, again supporting discriminant validity across all data sets. In sum, all the figures above met the conventional standards for measurement reliability and validity.

As already indicated, HPWS, PSYCAP and FTP are conceptualised as second-order constructs. We proposed that these variables matched the reflective-reflective type of second-order component model, and accordingly used the repeated indicator approach to model them (Becker et al., 2012). We assessed the psychometric properties of the second-order constructs based on the loading of their first-order constructs, and the composite reliability and AVE of the second-order constructs (Becker et al., 2012; Wetzels et al., 2009). As shown in Table 6, the loadings of Hope, Self-efficacy, Resilience, and Optimism on PSYCAP exceed 0.7 across all data sets. Similarly, the loading of Staffing and Selection, Training and Education, Internal Mobility, Employment Security, Clear Job Description, and Participation on HPWS are well above 0.7 across all data sets. The loading of FAF and FAL on FTP are also well above 0.7 across all data sets. The composite reliability of HPWS, PSYCAP, and FTP is higher than the threshold of 0.7. The AVE value of HPWS, PSYCAP and FTP is above the cut-off of 0.5. Overall, these figures indicate that the conceptual property of our second-order constructs, as postulated, harmonised with the reflective-reflective type of hierarchical component models with a satisfactory level of reliability and validity.

**Table 2** Psychometric properties for first-order constructs

construct name	Sub-construct	Item	Cyprus			Turkey			Dubai		
			Loading	$\rho$ (pc)	AVE	Loading	$\rho$ (pc)	AVE	Loading	$\rho$ (pc)	AVE
Self-efficacy		ps1	0.774	0.836	0.560	0.786	0.848	0.583	0.660	0.831	0.552
		ps3	0.777		0.803				0.774		
		ps5	0.711		0.754				0.777		
		ps6	0.731		0.707				0.755		
		ps8	0.770	0.838	0.633	0.815	0.871	0.693	0.819	0.797	0.572
		ps9	0.836		0.876				0.837		
Resilience		ps12	0.780		0.805			0.589			
		ps14	0.711	0.841	0.571	0.757	0.886	0.662	0.730	0.832	0.555
		ps15	0.798		0.858				0.829		
		ps16	0.767		0.837				0.752		
		ps18	0.743		0.797				0.661		
Optimistic		ps19	0.802	0.834	0.560	0.823	0.855	0.598	0.740	0.825	0.541
		ps20	0.738		0.772				0.721		
		ps21	0.813		0.821				0.774		
		ps22	0.625		0.665				0.706		
		hp1	0.832	0.862	0.675	0.870	0.881	0.711	0.821	0.866	0.683
staffing and selection		hp2	0.836		0.810			0.851			
		hp3	0.797		0.849				0.807		
		hp11	0.737	0.837	0.631	0.786	0.882	0.714	0.794	0.831	0.622
Internal mobility		hp12	0.826		0.882			0.815			
		hp13	0.817		0.863				0.755		

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**Table 2** Psychometric properties for first-order constructs (continued)

construct name	Sub-construct	Item	Cyprus			Turkey			Dubai		
			Loading	rho (pc)	AVE	Loading	rho (pc)	AVE	Loading	rho (pc)	AVE
Employment security		hp14	0.871	0.862	0.758	0.899	0.894	0.808	0.857	0.847	0.735
		hp15	0.871			0.899			0.857		
Training		hp5	0.817	0.857	0.602	0.802	0.852	0.591	0.765	0.860	0.605
		hp6	0.830			0.816			0.778		
		hp7	0.783			0.758			0.809		
		hp8	0.662			0.695			0.759		
		hp17	0.667			0.649			0.654		
Clear job description		hp18	0.708	0.862	0.556	0.656	0.841	0.516	0.761	0.851	0.534
		hp19	0.806			0.801			0.704		
Participation		hp20	0.746			0.739			0.789		
		hp21	0.791			0.734			0.740		
		hp24	0.728			0.756			0.792		
		hp25	0.802	0.812	0.590	0.825	0.830	0.620	0.829	0.838	0.633
		hp26	0.773			0.780			0.765		
FAF		Ftp1	0.834			0.852			0.799		
		Ftp2	0.880	0.874	0.698	0.889	0.905	0.760	0.891	0.879	0.709
		Ftp3	0.790			0.873			0.834		
FAL		Fla2	0.790			0.810			0.814		
		Fla3	0.771	0.774	0.536	0.738	0.781	0.545	0.861	0.837	0.633
		Fla4	0.624			0.659			0.703		



**Table 3** Discriminant validity: Fornell-Larcker criterion (Cyprus)

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1 Self-efficacy	0.56											
2 Hope	0.47	0.633										
3 Resilience	0.41	0.272	0.571									
4 Optimistic	0.332	0.398	0.402	0.56								
5 Staffing and selection	0.344	0.185	0.214	0.202	0.675							
6 Internal mobility	0.478	0.339	0.344	0.398	0.497	0.631						
7 Employment security	0.349	0.269	0.188	0.236	0.284	0.428	0.758					
8 Training	0.338	0.167	0.214	0.198	0.382	0.348	0.192	0.602				
9 Clear job description	0.4	0.226	0.208	0.201	0.395	0.41	0.47	0.358	0.556			
10 Participation	0.452	0.355	0.277	0.331	0.29	0.354	0.278	0.375	0.345	0.59		
11 FAF	0.391	0.189	0.276	0.198	0.388	0.373	0.252	0.379	0.48	0.293	0.698	
12 FAL	0.198	0.197	0.173	0.214	0.193	0.249	0.178	0.141	0.229	0.132	0.199	0.536

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**Table 4** Discriminant validity: Fornell-Larcker criterion (Turkey)

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1 Self-efficacy	0.583											
2 Hope	0.545	0.693										
3 Resilience	0.524	0.372	0.662									
4 Optimistic	0.391	0.434	0.532	0.598								
5 staffing and selection	0.441	0.255	0.433	0.308	0.711							
6 Internal mobility	0.486	0.379	0.481	0.479	0.457	0.714						
7 Employment security	0.358	0.275	0.255	0.221	0.391	0.474	0.808					
8 Training	0.432	0.241	0.378	0.241	0.438	0.307	0.215	0.591				
9 Clear job description	0.424	0.267	0.284	0.177	0.433	0.413	0.49	0.31	0.516			
10 Participation	0.576	0.434	0.466	0.413	0.348	0.347	0.312	0.386	0.277	0.62		
11 FAF	0.428	0.227	0.384	0.251	0.447	0.348	0.292	0.389	0.452	0.372	0.76	
12 FAL	0.243	0.237	0.319	0.288	0.316	0.384	0.207	0.193	0.205	0.187	0.42	0.545

**Table 5** Discriminant validity: Fornell-Larcker criterion (Dubai)

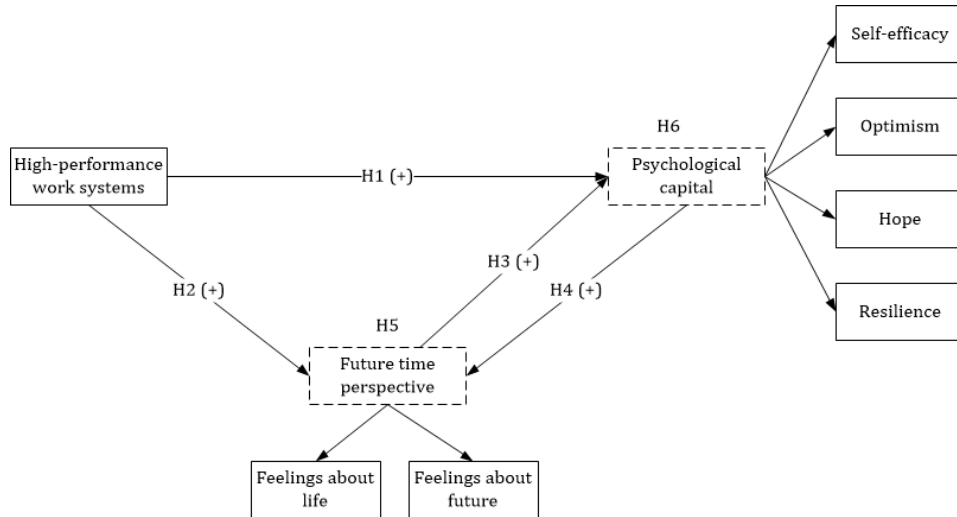
Construct	1	2	3	4	5	6	7	8	9	10	11	12
1 Self-efficacy	0.552											
2 Hope	0.27	0.572										
3 Resilience	0.166	0.304	0.555									
4 Optimistic	0.156	0.279	0.339	0.541								
5 Staffing and selection	0.109	0.086	0.088	0.086	0.683							
6 Internal mobility	0.077	0.134	0.103	0.116	0.215	0.622						
6 Employment security	0.075	0.144	0.068	0.084	0.19	0.383	0.735					
7 Security training	0.151	0.068	0.137	0.136	0.365	0.163	0.193	0.605				
8 Clear job description	0.146	0.141	0.134	0.161	0.208	0.359	0.257	0.201	0.534			
9 Participation	0.114	0.176	0.154	0.12	0.23	0.255	0.251	0.166	0.341	0.633		
10 FAF	0.077	0.117	0.054	0.075	0.208	0.159	0.1	0.06	0.077	0.07	0.709	
11 FAL	0.071	0.117	0.141	0.099	0.129	0.06	0.038	0.109	0.032	0.058	0.237	0.633

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**Table 6** Psychometric properties for second-order constructs

Construct name	Cyprus			TURKEY			Dubai		
	<i>rho (pc)</i>	AVE	loading	<i>rho (pc)</i>	AVE	loading	<i>rho (pc)</i>	AVE	loading
FTP	FAF	0.724	0.888	0.905	0.826	0.923	0.855	0.747	0.870
	FAL		0.812			0.895			0.858
PSYCAPT	Self-efficacy	0.910	0.878	0.929	0.765	0.894	0.872	0.632	0.721
	Hope		0.838			0.857			0.844
	Resilience		0.830			0.886			0.811
	Optimistic staffing and selection		0.837			0.860			0.798
HPWS	Internal mobility	0.924	0.863	0.927	0.680	0.853	0.894	0.632	0.788
	Employment and Security		0.783			0.815			0.757
	Training		0.790			0.789			0.727
	Clear job description		0.850			0.829			0.788
Participation		0.789			0.798			0.763	

**Figure 1** Research model



#### 4.2 Assessment of the structural model

This study was designed to examine an episodic mediation model. In the first episode or scenario, it was proposed that FTP mediates the HPWS-PsyCap link; and in the second, that PsyCap mediates the HPWS-FTP link. Accordingly, we developed a structural model for each mediation model and then tested each against the three data sets. The subsequent structural models were assessed from the results of the PLS algorithm and bootstrapping procedures. The first model explains 71%, 60% and 37% of the variance in PsyCap across the samples from Turkey, Cyprus and the UAE, respectively. These figures indicate a large explanatory power, bearing in mind our choice of antecedents. Moreover, the path coefficient analysis presented in Table 7 clearly shows that HPWS has a positive impact on PsyCap: for Turkey (path coefficient: 0.72, p, 0.001), Cyprus (path coefficient: 0.603, p, 0.001) and the UAE (path coefficient: 0.468, p, 0.001). Thus, H1 is supported. Similarly, the effect of HPWS on FTP is also positive and significant: for Turkey (path coefficient: 0.763, p, 0.001), Cyprus (path coefficient: 0.771, p, 0.001) and the UAE (path coefficient: 0.443, p, 0.001). These figures provide support for H2. The third hypothesis, relating to the positive effect of FTP on PsyCap, is also strongly supported: Turkey (path coefficient: 0.147, p, 0.01), Cyprus (path coefficient: 0.211, p, 0.001) and the UAE (path coefficient: 0.235, p, 0.001). Therefore, H3 is accepted.

With regard to H5, which predicts that FTP mediates the HPWSs-PsyCap relationship, we carried out a simple mediation analysis using the bootstrapping strategy recommended by Preacher and Hayes (2008). In a simple mediation analysis, the mediation effect is confirmed when the indirect effect between an independent variable and a dependent variable is significant (Nitzl et al., 2016; Preacher and Hayes, 2008). The results shown in Table 8 confirmed the hypothesised mediation, where the indirect effect between HPWS and PsyCap through FTP is significant: for Turkey (path coefficient: 0.111, p, 0.05), Cyprus (path coefficient: 0.162, p, 0.001) and the UAE (path coefficient: 0.104, p, 0.01). Since the direct effect between HPWS and PsyCap is still

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significant in the presence of FTP in all data sets, we conclude that FTP partially mediates the link between HPWS and PsyCap. We also estimated the Variance Accounted For (VAF) to estimate the size of the indirect effect in relation to the total effect (Klamer et al., 2013). The results in Table 8 indicate that 13.4% (Turkey), 21.2% (Cyprus), and 18.1% (UAE) of the variance in the total effect stems from the indirect path, approving the partial mediation of FTP.

**Table 7** Estimates of path coefficients in the structural model (episode one)

Effect	Turkey		Cyprus		Dubai	
	Coefficient (SE)	t-value (P-value)	Coefficient (SE)	t-value (P-value)	Coefficient (SE)	t-value (P-value)
FTP ->	0.147	2.655	0.211	3.624	0.235	3.322
PSYCAPT	(0.055)	(0.008)	(0.058)	(0.000)	(0.071)	(0.001)
HPWS ->	0.763	26.818	0.771	32.824	0.443	5.992
FTP	(0.029)	(0.000)	(0.024)	(0.000)	(0.074)	(0.000)
HPWS ->	0.720	15.064	0.603	10.503	0.469	5.434
PSYCAPT	(0.048)	(0.000)	(0.057)	(0.000)	(0.086)	(0.000)
R <sup>2</sup> -square	0.71		0.60		0.37	

**Table 8** Estimates of indirect path coefficient in structural model and VAF (episode One)

Model	Effect	Indirect effect Coefficient (SE)	t-value (P-value)	Percentile bootstrap quantiles				Total effect	AVF
				0.50%	2.50%	97.50%	99.50%		
Turkey	HPWS -> PSYCAPT	0.112 (0.044)	2.541 (0.011)	0.0152	0.0305	0.2013	0.2268	0.831	0.135
Cyprus	HPWS -> PSYCAPT	0.163 (0.047)	3.465 (0.001)	0.0471	0.0744	0.2634	0.285	0.766	0.212
Dubai	HPWS -> PSYCAPT	0.104 (0.032)	3.283 (0.001)	0.0164	0.0371	0.1643	0.1777	0.573	0.182

The second model explains 59%, 61% and 24% of the variance in FTP across the samples from Turkey, Cyprus and the UAE, respectively. These figures indicate a large explanatory power. Similar to the previous results, the path coefficient analysis in Table 9 clearly shows that the effect of HPWPs on FTP and PsyCap is positive and significant, confirming H1 and H2. Specifically, HPWS has a positive impact on PsyCap: for Turkey (path coefficient: 0.831, p, 0.001), Cyprus (path coefficient: 0.676, p, 0.001) and the UAE (path coefficient: 0.573, p, 0.001). The positive effect of HPWS on FTP is also strongly supported: Turkey (path coefficient: 0.951, p, 0.001), Cyprus (path coefficient: 0.612, p, 0.001) and the UAE (path coefficient: 0.282, p, 0.001). The fourth hypothesis, relating to the positive effect of PsyCap on FTP, is also strongly confirmed: Turkey (path coefficient: 0.198, p, 0.01), Cyprus (path coefficient: 0.207, p, 0.001) and the UAE (path coefficient: 0.281, p, 0.001), supporting H4. We can note that the variance value from Dubai is weaker than Turkey and Cyprus due to the diversity of the workers and the workers' culture. Moreover, Al-Faleh (1987) "Clearly a country's

culture has a great influence on the individual and managerial climate, on organisational behaviour and ultimately on the types of managerial development programs offered”.

**Table 9** Estimates of path coefficients in the structural model (episode two)

Effect	Turkey		Cyprus		Dubai	
	Coefficient (SE)	t-value (P-value)	Coefficient (SE)	t-value (P-value)	Coefficient (SE)	t-value (P-value)
PSYCAPT ->	0.198	2.743	0.207	3.865	0.281	3.460
FTP	(0.072)	(0.006)	(0.054)	(0.000)	(0.081)	(0.001)
HPWS ->	0.599	9.171	0.612	12.178	0.282	3.403
FTP	(0.065)	(0.000)	(0.050)	(0.000)	(0.083)	(0.001)
HPWS ->	0.831	51.078	0.766	34.256	0.573	6.943
PSYCAPT	(0.016)	(0.000)	(0.022)	(0.000)	(0.083)	(0.000)
R <sup>2</sup> -square	0.59		0.61		0.24	

Finally, the results presented in Table 10 confirm the hypothesised mediation where the indirect effect between HPWS and FTP through PsyCap is significant: for Turkey (path coefficient: 0.164, p, 0.05), Cyprus (path coefficient: 0.158, p, 0.001) and the UAE (path coefficient: 0.160, p, 0.01). Since the direct effect between HPWS and FTP is still significant in the presence of PsyCap in all datasets, we can conclude that PsyCap partially mediates the relationship between HPWS and PsyCap. The results indicate that 21.6% (Turkey), 20.6% (Cyprus) and 36.4% (UAE) of the variance in the total effect stems from the indirect path, confirming the partial mediation played by PsyCap.

**Table 10** Estimates of Indirect path coefficient in the structural model and VAF (Episode Two)

Model	Effect	Indirect effect Coefficient (SE)	t-value (P-value)	Percentile bootstrap quantiles				Total Effect	VAF
				0.50%	2.50%	97.50%	99.50%		
Turkey	HPWS -> FTP	0.165 (0.061)	2.695 (0.007)	0.025	0.048	0.281	0.331	0.763	0.216
Cyprus	HPWS -> FTP	0.158 (0.042)	3.765 (0.000)	0.045	0.074	0.240	0.273	0.771	0.206
Dubai	HPWS -> FTP	0.161 (0.050)	3.225 (0.001)	0.028	0.055	0.254	0.283	0.443	0.364

Altogether, it is clear, based on the analyses in this section, that all of the paths relating to causal relationships among HPWS, FTP and PsyCap are supported. The suggested model is found equally valid in the UAE, Cyprus, and Turkey in terms of explaining the effect of HPWS on FTP and PsyCap.

## 5 Discussion

Even though research into HPWS is well-established, with wide-ranging debates persisting in the realm of organisational-level performance (Guest et al., 2003; Namasivayam et al., 2007), there relatively few investigations have examined the effects of HPWS on employee psychology-related outcomes (Abubakar et al., 2019; Pauwee, 2009; Jiang et al., 2012; Kim et al., 2018). In order to bridge this void, scholars have

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advocated the development of theoretical frameworks explaining the effect of HPWS on positive organisational behaviour outcomes such as FTP and PsyCap. Drawing on signalling theory and social exchange theory, this research offers a concrete step in this research agenda by developing and examining a theoretical model explaining the consequence of HPWS on both FTP and PsyCap. The suggested model offers an interactive perspective describing the reciprocal dynamics between FTP and PsyCap. Since FTP and PsyCap are considered to be intertwined, the suggested model also posits their role as both mediators and outcomes of the impact of HPWS in two mediation models.

Relying on data from the banking sectors of three countries (Turkey, Cyprus, the UAE), we found support for the claim that HPWS has a positive effect on PsyCap and FTP. This finding suggests that HPWS can develop confidence, hope, optimism, and resilience, which in return positively affect both individual and organisational performance. Similarly, HPWS can transform and shape individuals' perception of how much time they have for future opportunities. As suggested by signalling theory, our results confirm that positive evaluation of the components of HPWS by employees are conceived as signals that elevate feelings about life and future as a function of work; and also spur and shape their psychological outlook. This implies that PsyCap and FTP, similar to human capital and social capital, are open to development and investment, and can be managed for more effective work performance under HPWS. Our findings are in line with those of Chen et al. (2016a); Lepak et al. (2006) and Luthans et al. (2010), who found support for the HR practices-PsyCap association. Our findings are also harmonise with some previous conclusions relating to FTP, such as those of Wood and de Menezes (2011) and Agarwal and Farndale (2017), who found that HPWS boosted positive appraisal of situations and the probability of success, which may stimulate evaluations of life and the future.

Interestingly, our study reveals that both PsyCap and FTP are closely intertwined in a reciprocal relationship, reinforcing each other. On one hand, positive perception about the future improves personal PsyCap. Future-oriented persons with a positive feeling about life encourages better work attitudes, well-being, happiness, greater self-efficacy, and persistence in coping with hardship at work and elsewhere; it confirms the key tenet that FTP has a positive effect on psychological and work-related outcomes (Henry et al., 2017; Park and Jung, 2004; Rudolph et al., 2018; Cunningham et al., 2015; Husman and Shell, 2008). On the other hand, PsyCap improves employees' mental representation of the future. An employee equipped with more hope, self-efficacy, optimism, and persistence is more likely to anticipate positive outcomes and to have more confidence and motivation in building positive future expectations, this confirming the belief that PsyCap is a personal resource (Wood and Bandura, 1989). The main implication of this reciprocal effect between PsyCap and FTP is that employees constantly update and refresh their psychological orientation (i.e., PsyCap and FTP) based on past experience. Therefore, PsyCap and FTP offer mutual feedback and are re-constructed and refined accordingly. While prior research proposes a sequential association between FTP and some psychological outcomes (see, for example, Rudolph et al., 2018; Cunningham et al., 2015; Husman and Shell, 2008), our result highlights the possibility that the PsyCap-FTP relationship is reciprocal, demonstrating the dynamics between the two psychological constructs.

In terms of mediating mechanisms through which HPWS affects PsyCap and FTP, our analysis reveals that PsyCap and FTP reciprocally convey the effect of HPWS. On



one hand, HPWS sends signals to employees to activate and motivate their positive sense toward life and the future, which further facilitates their transformation into confident, skilled, and optimistic individuals. On the other hand, HPWS can provide opportunities to promote employees' PsyCap, enabling them to construct a positive FTP. These results highlight the central and reciprocal role of psychology-related variables through which HPWS has an impact.

### *5.1 Implications*

The major purpose of this research was to develop a theoretical model of the effect of HPWS on PsyCap and FTP and to offer empirical evidence in a cross-national context. Although there is early empirical evidence highlighting the contribution of HPWS to both PsyCap and FTP, there was no integrated model expressing the nature of the dynamics between the three constructs. This paper addresses this important gap by 1) exploring the effect of HPWS on both PsyCap and FTP in a single model, 2) exploring the possibility that the relationship between PsyCap and FTP may be reciprocal and 3) exploring the role of PsyCap and FTP as both mediators and outcomes of the impact of HPWS. In doing so, it highlights the importance of HPWS in nurturing PsyCap and FTP for more effective work performance.

Signalling theory offers an important insight into how employees' psychological orientations are developed and reconstructed based on signals from HPWS. As both PsyCap and FTP are psychological states, they are open to development and enhancement by the components of HPWS which play a critical role in signalling information to form and modify these psychological states. While this insight advances current understanding of the association between HPWSs and PsyCap and FTP, more work should be done with the aid of signalling theory to examine several contingencies that may affect employees' assessment of the signals sent by HPWS, including individual differences, values and culture. However, this study also highlights that, rather than being independent, the psychological states of PsyCap and FTP are closely entwined in a mutual relationship of strength. Moreover, PsyCap and FTP are critical mechanisms for transferring and facilitating the effects of HPWS on each other. Even though earlier researchers considered their effect as separate and sequential, this study highlights the need to consider the dynamic and reciprocal relationships between several psychological states when studying HPWS. This is relevant as employees constantly re-construct and refine their psychological states according to circumstances.

For practitioners, this study suggests that HR professionals and managers need to invest in and develop both PsyCap and FTP for effective work performance. Employees with a high level of PsyCap and FTP will be more adaptive and successful over time. HR departments should design a mechanism to continuously monitor and trace the psychological states of employees, particularly PsyCap and FTP. Proactive and reactive intervention programs are needed to reach and maintain the desired level of PsyCap and FTP. HR professionals should also frame and design HPWS in a manner signalling that the organisation invests in its staff, providing opportunities for their future and appreciating their contribution. Such signals would transform employees into confident, skillful, optimistic individuals, and encourage their sense of future time and events.

## 5.2 Limitations and directions for future study

Despite its contributions the study has several limitations. First, it has a small sample size, despite data being collected from three different countries. We recommend replicating the study with a more representative sample using a longitudinal design in a cross-nation study. Second, this study focuses on one industry; it would be interesting to apply it in another sector for a comparative perspective of the results and implications. Third, we focused on a two-way mediation effect, which proved significant. These results suggest another possible avenue for future research examining more mediation effects such as the Occupational Future Time Perspective (OFTP) and organisational learning. Finally, the theoretical model presented here focuses on HPWS, PysCab and FTP, and future studies may change the role of the study variables, specifically HPWS (Kaše et al., 2014).

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