Human-behavioural micro-foundations of dynamic capabilities: a systematic review of the last two decades of research

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Abstract: Given the importance of dynamic capabilities in gaining competitive advantage and improving the organisational performance, recent studies have focused on its human-behavioural micro-foundations as a basis for improving dynamic capabilities at organisations macro level. This article reviewed the literature in the field of behavioural and human resource foundations of dynamic capabilities using a systematic literature review method and evaluated the quality of articles with CASP method. After a systematic review of 41 final articles, 15 themes were identified for the behavioural foundations of dynamic capabilities. The sensing dimension includes personal and interpersonal indicators, in seizing dimension, indicators of communication, conflict management, organisational climate, etc. The reconfiguring dimension involved the indicators of knowledge management, leadership, talent management, capacity building, and diversity of employees.

Keywords: dynamic capabilities; micro foundations; behavioural dimension; human dimension; systematic review.

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1   Introduction

Today, attention to capabilities in order to utilise the internal capacity of organisations for improvement has gained great significance (Roy, 2020). It should be noted that there is a distinction between the concept of competency and capability. Competency is the possession of the skills, knowledge, and capacity to fulfil the current needs whereas capability is the qualities, abilities, capacity, and the potentials for development (Hanifah et al., 2021; Vafaei-Zadeh et al., 2019a). While competence deals with the current state, capability focuses on developing and meeting future needs (Nagarajan and Prabhu, 2015). The literature suggests that dynamic capabilities are among the most important capabilities influencing the performance of organisations. Dynamic capability is defined as the ability to revise the skills and internal resources of an organisation, emphasising adapting, integrating, and reconstructing organisational processes to adapt to change (Arndt and Pierce, 2018). The research course on dynamic capabilities reveals two lines of thought; one is the descriptive conceptualisation of these capabilities from the evolutionary perspective of Teece et al. (1997) and other researchers. The other focuses on creating and shaping roots and foundations of these capabilities. This reflects different path requirements resulting from the processes and procedures specific to each

organisation, leading to a unique set of dynamic capabilities for each organisation and highlighting the challenges and theoretical gap present in this theory (Kurtmollaiev, 2020). Teece (2007) introduced three forms of behavioural dynamic capability as follows:

1 sensing (and shaping) opportunities and threats

2 seizing opportunities

3 reconfiguring assets and resources to sustain competitiveness.

Sensing requires searching and discovering markets and technologies while seizing and reconfiguring involve making decisions about the opportunities and threats perceived at the earlier stage, and the ability of senior management to coordinate and execute organisational change and strategic revitalisation by redefining the organisational and social identities of the organisation respectively (Hodgkinson and Healey, 2011). Given these three dimensions, most research studies have highlighted the question of 'where the dynamic capabilities are formed?' Proponents of micro and mid organisational levels, as the key foundations of macro structures such as organisational routines (i.e., the source of dynamic capabilities) argue that organisational routines are macro propositions of organisations, and the why and how of individuals' actions fall in lower levels of the organisation which are able to influence the execution of routines, their efficacy and their capability to change and improve under conditions of organisational change (Abell et al., 2008). Hodgson (2012) complements Coleman (1994) boat model and states that at micro and meso levels, both the issue of individual actions and the relationship between actions and individual interactions are critical. Thus, organisational meso levels that represent individuals' beliefs about each other's conditions and practices and reflect their social interactions also play a role in the impact of micro (individual) and meso (group) levels on the macro level of the organisation (Kurtmollaiev, 2020).

Hodgkinson and Healey (2011) conducted further studies and concluded that at the sensing level, the role of intuition and the insights of individuals in the organisation to detect opportunities and constraints of internal and external resources of the organisation; at the seizing level, the role of values and norms of the individuals in the organisation and the elimination of perceptive and cognitive errors to identify the best opportunities, and finally at the reconfiguration level, the role of organisational people's values, emotions, and behavioural components to adapt to new structures as well as their openness to change previous routines are of vital significance (Hodgkinson and Healey, 2011). Helfat and Petraff (2015) underscored the cognitive capabilities of managers as the foundations of dynamic capabilities (Helfat and Petraff, 2015).

It can, therefore, be argued that the main theoretical gap in the fundamental nature and definition of dynamic capabilities found in various sources and research work in the field of this theory is created because the theory has been introduced at the macro level of the organisation, thus failing to create a link between the field of capability development, individual and organisational strategies that build the required capabilities at the micro and meso levels of the organisation. In other words, the gap is created because there are a variety of descriptive theoretical perspectives on dynamic capabilities that create confusion and a black box between this factor and organisational performance to gain advantage. In many of their studies, researchers have highlighted the fact that addressing the human-behavioural foundations in future research is the key to unlocking this black

box and believe that one of the main approaches to open this black box is to analyse the dynamic micro-foundations (Kevill et al., 2017). This requires a normative rather than a descriptive approach as descriptive analyses of the dynamic capabilities at the macro level have primarily been conducted, and their results in the empirical and practical fields have failed to provide promising results (Felin et al., 2012; Salvato and Rerup, 2011; Vogel and Güttel, 2013; Winter, 2003). Therefore, it can be argued that the reason for the gap lies in the less normative approaches to the theory that examine the core foundations of this concept at the micro and meso levels of organisations, and the greater attention of current research to descriptive definitions and explanations and the development of descriptive propositions about the concept. Based on the above argument, this article attempted to systematically review the literature on behavioural foundations of dynamic capabilities in papers published by 2020 and extract the behavioural foundations of dynamic capabilities found in them. First, the nature of dynamic capabilities and their behavioural foundations were described, and next, the behavioural foundations presented in these articles were reviewed and introduced using a systematic review of articles in the field.

2   The nature of dynamic capabilities

The idea of dynamic capabilities in strategy studies was introduced in the classic paper of Teece et al. (1997). In recent years, the idea of dynamic capabilities has been addressed through other applied fields such as marketing, human resources, and information technology as well. Strategic management research focuses on how to create and maintain competitive advantage for companies. In this context, the resource-based view (RBV) (Barney, 1991) is one of the basic theoretical approaches. RBV theory is based on the assumption that resources are heterogeneously distributed across companies, and such heterogeneity persists over time because resources are deficient and limited (Gagné, 2018). Specifically, RBV theory suggests that sources of sustained competitive advantage must meet the four criteria of 'worthiness', 'rarity', 'replicability' and 'irreplaceability'. As a result, several scholars have emphasised the distinction between organisational resources and capabilities, where source refers to the inputs of production that corporate owners have semi-permanent access to and control over it, and capability describes the corporate's capacity to deploy resources to achieve a desired outcome (Helfat and Peteraf, 2015).

Zollo and Winter (2002) define dynamic capabilities as "a sustainable pattern of collective activity through which the organisation systematically improves, produces, and modifies its operational procedures in search of effectiveness". Attention to certain issues is vital concerning dynamic capabilities. Zahra and George (2002) argue that company-specific characteristics reflect specific path dependencies (the history of specific company activities). Therefore, there are specific processes and procedures for each company that reflect its type of dynamic capabilities. It should, therefore, be noted that these capabilities are not direct sources of competitive advantage; rather, the distinctive methods by which companies develop and use these capabilities will result in competitive advantage. In fact, diversity lies in the specific methods used by companies to develop and use capabilities, thus generating various types of competitive advantage in an industry. Hence, it is essential to understand the dynamic capabilities of each company. However, how these capabilities are deployed and used in the corporate to lead

to success is of greater significance. In explaining the role of organisational people in resource and capabilities dynamism, Helfat et al. (2009) maintain that dynamic capability involves an organisation's capacity to create, expand, or modify its resource base purposefully. The resource base of the organisation includes tangible, indirect and human resources as well as capabilities that the organisation owns, controls or has access to.

3 Theoretical gap in attention to the behavioural foundations of dynamic capabilities

Confusion about the basic nature and definition of dynamic capabilities among research studies seems to be due to the fact that the theory has been presented at the macro level of the organisation and has not been able to explain the development of capabilities between individual and organisational levels. Abell et al. (2008) argue that when it is said that a company has dynamic capabilities, this would be effective to describe a complex set of basic actions and interactions at the lower levels of the organisation that combine into these capabilities. Therefore, the criticism is that the nature and place of development and the establishment of the foundations of dynamic capabilities in the organisation are unclear. Dynamic capabilities clearly deal with capabilities, but it is unclear what organisational level these capabilities will eventually be. Are these capabilities structures or processes and therefore organisational competencies or are they are the result of individual competency? (Helfat et al., 2009). To address these criticisms, researchers have tried to focus on the ability to combine and connect resources rather than focusing on resources themselves, and thus on individual's decisive role in organisations and their emotional and behavioural aspects in resource composition and to improve their attention to adapt to the available static and variable conditions (Ambrosini et al., 2009; Silva-da-Nóbrega and Chim-Miki, 2021; Flin et al., 2012). Hence, the attention of scholars moved towards the concept of micro-foundations. Understanding the concept of micro-foundation has received great attention in theories of strategic management and organisation in the past decade, and the term has been interpreted in various ways such as deep capabilities (Barney and Felin, 2013), micro-processors (Felin et al., 2012), psychological foundations (Hodgkinson and Healey, 2011), strategic behavioural foundations (Nagel, 2014), etc. The main reason for addressing this concept has been to understand how micro and individual (behavioural) foundations affect the macro-level (strategic) of the organisation.

How individuals' micro actions influence relationships between macro-organisational levels and behaviours (Vafaei-Zadeh et al., 2019b) and their group interactions at the micro and meso levels have been the most important reasons for considering organisational foundations (Foss et al., 2012). The contextual and underlying micro and meso dimensions in an organisation involve the human-behavioural foundations, such as different types of behaviours, cognitions, attitudes at the individual level, and interactions, partnerships, conversations, communication capitals, etc. at the group level that allow individuals to systematically identify the need for change in organisational practices and capabilities (Verona and Zollo, 2011; Salvato and Vassolo, 2018).

The influence of individuals at the micro level of the organisation on the macro level of the organisation is usually defined as changing an individual's attitude or behaviour in response to individuals, processes, routines, etc. or in particular, to the influence of

information on the behaviour or attitude of an individual in relation to other procedural and human factors. This component reflects part of the impact of organisational people on changing the organisation's operational procedures and capabilities at the macro level which will prepare the members of the organisation for changes in the day-to-day tasks that will pave the way for successful changes (Kurtmollaiev, 2020; Bressanelli et al., 2019; Vafaei-Zadeh et al., 2020). Therefore, while the theorists of dynamic capabilities describe and evaluate these capabilities as macro-level organisational abilities, and regard them as organisational operational practices at the macro level, a growing number of researchers such as Hodgkinson and Healey (2011), Kurtmollaiev (2020), Nagel (2017), Salvato and Vassolo (2018), etc. believe that the main root of these capabilities are human-behavioural foundations in organisations that ultimately lead to transformations in organisational-level routines and the creation of capacity for improvement. Gonzalez (2021) believes that dynamic capability has a strong positive influence on team performance despite learning culture and teamwork context having no direct association with performance. Also, Berger-Douce (2021) emphasise the role of resilience, especially in crises (especially the Covid 19 pandemic crisis) to improve dynamic organisational capabilities to enhance crisis performance.

In fact, it can be acknowledged that the ability to shift the path in the application of dynamic capabilities is possible when the human-behavioural foundations which some of them were mentioned above are identified, studied and managed as human-behavioural foundations, and employees apply them to reach higher levels of competence, thus anticipating opportunities through their creativity to improve the performance of the company and to change its procedures. These foundations stimulate the dynamics of organisational resources and create dynamic capabilities to gain advantage (Pretorius, 2018).

Therefore, it is important to know the existing difference between recognising the concept of dynamic capability and contextualising factors in dynamic capabilities in the organisation. A dynamic capability is created when organisational development is done in such a way that dynamic capability itself is the company's ability to perform this development. In other words, a dynamic capability is a potential for action' instead of the action itself (Helfat et al., 2009). But since organisational development is based on the organisation's resources, including human resources and their behaviours and preferences, dynamic capability must logically be based on all human factors, skills, knowledge of common practices and knowledge that facilitate actions. The underlying factors, are micro foundations of dynamic capabilities (Felin et al., 2012), a combination of which leads to the dynamisation of the organisation (Teece, 2012).

4   Methodology

According to Fink (2005), literature review is a systematic, explicit, and repeatable pattern for identifying, evaluating, and interpreting recorded documents. Literature review is often carried out to achieve two main goals (Seuring and Müller, 2008) of summarising current studies by identifying patterns, themes and issues, and assisting in identifying the conceptual content of an area and contributing to the development of a theory. The researcher should apply certain rules or protocols to select previous articles and sources to conduct a systematic review. This study employed five protocols for article selection as follows:

1   The articles were written in English.

2   They were related to the research topic. For example, many papers on dynamic capability foundations focused on non-behavioural foundations; however, the researcher only reviewed articles that examined the behavioural micro-foundations of dynamic capabilities either directly or indirectly. Furthermore, this study used both qualitative and quantitative articles.

3   They were available on the internet sites (because there was no access to written articles).

4   Time period for reviewing articles. For a comprehensive coverage of the aims of this research, all time periods were used by the researchers in the process of paper collection to gain a deeper understanding of the historical evolution of the theory. Accordingly, the databases of Wiley, Sage, Emerald, Science Direct, Springer, etc. were used to achieve the research goal, and to access the theoretical foundations of the research according to the above protocols. The reason for using these databases was that they had indexed a wide range of journals in the field of strategic management and organisational behaviour management, and reputable journals were indexed in the databases with acceptable scientific quality.

Therefore, the following keywords were searched when visiting these databases:

- dynamic capability

- dynamic capability micro foundation

- psychology foundation in organisation

- behavioural root of dynamic capability

- source of dynamic capability

- human side of dynamic capabilities

- behavioural side of dynamic capabilities.

These keywords were searched in the titles, abstracts, and keywords and related articles were identified. Ninety articles were found for the period of 2000 to the end of 2020, of which 12 articles were rendered as repeated due to their overlap in terms of the searched keywords and the scope of the study. By removing the repeated articles, abstracts, and texts (when necessary), 78 remaining articles were examined, and it was found that 20 articles have a study scope unrelated to human-behavioural foundations of dynamic capabilities, and 58 articles are relevant in this regard. These 58 articles underwent qualitative review (Table 1 and Table 2 and Figure 1).

One of the tools used to evaluate the quality of articles is CASP (Leung, 2015) which helps the researcher assess the accuracy, validity, and importance of the articles using ten questions as follows:

1   Research objectives: whether the article has a definite and clear purpose.

2   Method logic: what method is used, and does the method enjoy the highest level of logic, appropriateness or scientific method.

3   Research design: whether the researcher has well explained and described the topic, the importance of the topic, the goals, the hypotheses and the methods.

4   Sampling method: sample is part of the community under investigation, selected by a predetermined method. Is this method valid?

5   Data collection: whether standard and common tools common in these areas have been used for data collection.

6   Reflectivity: this involves the relationship between the researcher and the audience.

7   Ethical considerations: have researchers used and appropriately cited credible scientific sources?

8   Accuracy of data analysis: have specific tools been used, and has data analysis been performed well?

9   Clearly stated findings: are the results of the work easy for the reader to understand?

10   Research value: does the research have scientific or practical value?

It should be noted that since a large number of the reviewed articles followed an analytical-conceptual approach, in CASP evaluation, questions 1, 2, 3, 6, 7, 9 and 10 and the value of the reviewed paper in the explanation of most human-behavioural foundations of dynamic capabilities were used, relying on credible sources and effective analyses. Furthermore, the majority of articles were published in highly prestigious journals such as *Strategic Management Journal*, and enjoyed high credibility. Finally, following this method and after obtaining expert opinions, 17 articles were rejected, and 41 articles were approved to provide the basis of the systematic reviews.

Figure 1   Articles search and selection process for a systematic review of behavioural foundations of dynamic capabilities
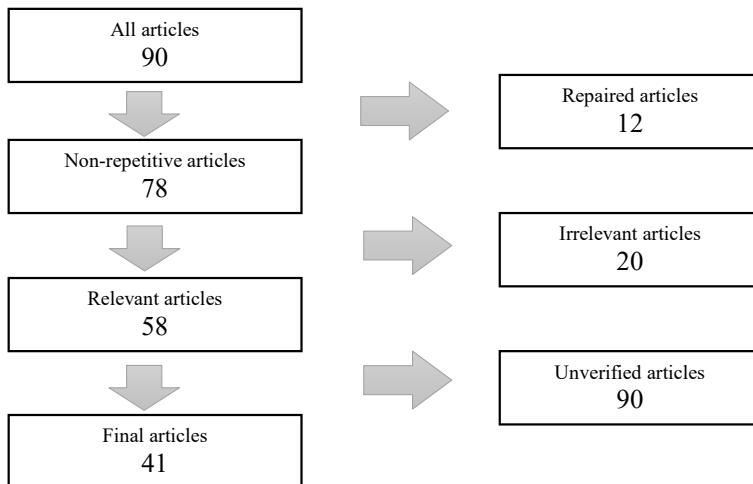
Table 1   The number of final articles reviewed from databases

Databases	Number of articles reviewed	Journals	Databases	Number of articles reviewed	Journals
Wiley	19	• Strategic Management Journal • Human Resource Management • British Journal of Management • Journal of Organisational Behaviour • Sustainable Development • Journal of Management Studies • Handbook of Organisational Learning and Knowledge Management, Second Edition • Public Administration Review • Public Administration • European Journal of information Systems • Futures and Foresight Science	Sage	10	• Strategic Organisation • California Management Review • International Small Business Journal • Journal of Management • Strategic Organisation • Group and Organisation Management • Developing Human Resources • California Management Review • Journal of Human Values • Tourism and Hospitality Research
Emerald	2	• Personnel Review • Baltic Journal of Management	Science Direct	5	• Industrial Marketing Management • Global Economics and Management Review • Long Range Planning • Business Research Quarterly
Emerald	2	• Journal of International Entrepreneurship	Science Direct	5	• Scandinavian Journal of Management
Springer	2	• Health Services Research	Taylor and Francis	1	• Total Quality Management and Business Excellence
JSTOR	1	• Organisation Science	Oxford	1	• Industrial and Corporate Change

Table 2 Final articles and the publications

Author (year)	Title	Methodology	Author (year)	Title	Methodology
Roy (2020)	Dynamic capability as the epistemology of an organisation: a social venture context	Analytical-conceptual	Tallott and Hilliard (2016)	Developing dynamic capabilities for learning and internationalisation: a case study of diversification in an SME.	Conceptual-qualitative
Appleyard et al. (2020)	Regaining R&D leadership: the role of design thinking and creative forbearance	Empirical	Helfat and Petraff (2015)	Dynamic managerial capabilities: review and assessment of managerial impact on strategic change.	Conceptual
Eşitti and Kasap (2020)	The impact of leader-member exchange on lodging employees' dynamic capacities: the mediating role of job satisfaction.	Empirical	MacLean et al. (2015)	Rethinking dynamic capabilities from a creative action perspective.	Conceptual-analytical
Schwarz et al. (2020)	Corporate foresight as a micro foundation of dynamic capabilities.	Empirical	Helfat and Martin (2015)	Managerial cognitive capabilities and the micro foundations of dynamic capabilities.	Conceptual-analytical
Gonzalez and de Melo (2020)	How do autonomy, cohesion and integration of teamwork impact the dynamic capability?	Empirical	Molina-Azorin (2014)	Micro foundations of strategic management: toward micro-macro research in the resource-based theory.	Conceptual-analytical
Harsch and Festing (2020)	Dynamic talent management capabilities and organisational agility – a qualitative exploration.	Analytical-exploratory	Argote and Ren (2012)	Transactive memory systems: a micro foundation of dynamic capabilities.	Conceptual
Salvato and Vassolo (2018)	The sources of dynamism in dynamic capabilities	Analytical-conceptual	Hsu and Wang (2012)	Clarifying the effect of intellectual capital on performance: the mediating role of dynamic capability.	Empirical
Hilliard and Goldstein (2019)	Identifying and measuring dynamic capability using search routines	Empirical	Teece (2012)	Dynamic capabilities: routines versus entrepreneurial action.	Conceptual-analytical
Tran et al. (2019)	A process model of the maturation of a new dynamic capability	Analytical-conceptual	Hodgkinson and Healey (2011)	Psychological foundations of dynamic capabilities: reflexion and reflection in strategic management.	Conceptual-analytical
Gagné (2018)	From strategy to action: transforming organisational goals into organisational behaviour	Analytical conceptual	Verona and Zollo (2011)	The human side of dynamic capabilities: a holistic learning model.	Conceptual-analytical

Table 2 Final articles and the publications (continued)

Author (year)	Title	Methodology
Huy and Zott (2019)	Exploring the affective underpinnings of dynamic managerial capabilities: how managers' emotion regulation behaviours mobilise resources for their firms.	Analytical-conceptual
Schoemaker et al. (2018)	Innovation, dynamic capabilities, and leadership	Analytical-conceptual
Mudalige et al. (2018)	Exploring the role of individual level and firm level dynamic capabilities in SMEs' internationalisation.	Analytical-conceptual
Kevill et al. (2017)	Perceiving 'capability' within dynamic capabilities: the role of owner-manager self-efficacy.	Empirical
Strauss et al. (2017)	Fifty shades of green: how microfoundations of sustainability dynamic capabilities vary across organisational contexts.	Conceptual-theoretical
Kurtmollaiev (2020)	Dynamic capabilities and where to find them.	Analytical-conceptual
Nagel (2017)	Behavioural strategy and deep foundations of dynamic capabilities – using psychodynamic concepts to better deal with uncertainty and paradoxical choices in strategic management.	Conceptual-analytical
Lopez-Cabrales et al. (2017)	Leadership and dynamic capabilities: the role of HR systems	Analytical-conceptual
Del Mar Alonso-Almeida et al. (2017)	Shedding light on sustainable development and stakeholder engagement: the role of individual dynamic capabilities.	Empirical-quantitative
Fainshmidt and Frazier (2016)	What facilitates dynamic capabilities? The role of organisational climate for trust.	Empirical
Moon (2010)	Organisational cultural intelligence: dynamic capability perspective.	Conceptual-analytical
Fernández and Wise (2010)	An exploration of why public organisations 'ingests' innovations.	Conceptual-analytical
Felin and Foss (2012)	Organisational routines and capabilities: historical drift and a course-correction toward micro foundations.	Conceptual-analytical
Huang et al. (2009)	Knowledge management initiatives, organisational process alignment, social capital, and dynamic capabilities.	Conceptual-analytical
Pablo et al. (2007)	Identifying, enabling and managing dynamic capabilities in the public sector.	Case study
Ridder et al. (2007)	Differences in the implementation of diagnosis-related groups across clinical departments: a German hospital case study.	Empirical
Jones et al. (2005)	The impact of organisational culture and reshaping capabilities on change implementation success: the mediating role of readiness for change.	Empirical
Ridder et al. (2005)	Analysis of public management change processes: the case of local government accounting reforms in Germany.	Empirical
Vera and Crossan (2005)	Improvisation and innovative performance in teams.	Empirical
Jas and Skelcher (2005)	Performance decline and turnaround in public organisations: a theoretical and empirical analysis.	Empirical

Table 3   Raw (open) extracted codes for human-behavioural foundations of dynamic capabilities of the reviewed articles

Number	Author (year)	Human-behavioural foundations	Number	Author (year)	Human-behavioural foundations
1	Roy (2020)	Characters of human actors in the organisation, collective and group efforts interpretations and discourses of individuals, collective awareness, collective cognition.	6	Harsch and Festing (2020)	Employee talent management, paternalistic talent management, sophisticated talent management.
2	Appleyard et al. (2020)	Mixing logic and intuition, team management, teamwork, team leadership, creativity, patience and tolerance.	7	Salvato and Vassolo (2018)	Empowerment, creativity, interpersonal relationships, creating change by strengthening personal attitudes, norms, habits and integration as well as increasing capacity, developing areas that facilitate dialogue, partnership, and constructive opposition, quality of individual behaviours.
3	Eşitti and Kasap (2020)	Exchange of leader – follower, attitude, satisfaction, manager support, qualifications of managers.	8	Hilliard and Goldstein (2019)	Employees' commitment to search for new routines, increasing confidence, improving staff and people's view of new standards, teamwork, increasing the capacity of organisational communications between individuals within and outside the organisation.
4	Schwarz et al. (2020)	Organisational insight and foresight at the individual and managerial level, training managers, managers' mental patterns, leaders' perceiving capacity, leaders' decision-making capacity, leaders' adapting capacity.	9	Tran et al. (2018)	Social interactions, cognitive perceptions and interpretations of individuals, collective learning conflicts such as lack of communication between the knowledge gained through learning and the implementation of processes, experiential learning heuristic learning.
5	Gonzalez and de Melo (2020)	Teamwork autonomy, teamwork cohesion, teamwork integration.	10	Gagné (2018)	Motivation, sociability, goal internalisation, competency needs, autonomy needs, proportionality of values, individual-organisation proportion, self-regulation, conflict management, career development, organisational commitment.

Table 4 Raw and final codes extracted from the final articles of behavioural foundations of dynamic capabilities

Raw codes	Final code	Repetition in the reviewed sources	Citations
Creating change by strengthening personal attitudes, norms, habits and integration as well as increasing capacity, the quality of individual behaviours, improving employees and individuals' attitudes, individuals attitudes', human emotions, sharing ideas and insights, shared mental assumptions, shared mental models, negative emotions (fear and anxiety as a result of choice uncertainty, self-defence patterns), unconscious inner preferences, the atmosphere that influences the formation of attitudes, norms, behaviours and interactions of employees, individuals' creativity.	Personal and interpersonal factors	14	Appleyard et al. (2020), Alvato and Vassolo (2018), Hilliard and Goldstein (2018), Gagné (2018), Huy and Zott (2019), Kurtmollaiev (2020), Nagel (2017), Fainshmidt and Frazier (2016), MacLean et al. (2015), Verona and Zollo (2011), Salvato and Vassolo (2018), Ridder et al. (2007) and Mudalige et al. (2018)
Leadership, transformational leadership style, transformational leadership, exchange leadership, supportive leadership style, leadership ability, leadership capability, leader's prediction, leader's challenge identification, leader's decision making, leader's learning, leader's alignment, leader's interpretation of the conditions, perceived self-efficacy of the leader, manager's environmental perception, managers' perception of the value of change, dynamic capabilities of the manager, manager's individual competencies and skills, creating a collaborative environment by the manager, manager's social commitment, managerial cognition (mental models such as beliefs, mental processes such as attention, perception, etc.) introducing dynamic capability issues into the topics of personal influence, managerial cognitive ability.	Leadership and the leader	18	Eşitti and Kasap (2020), Schwarz et al. (2020), Schoemaker et al. (2018), Strauss et al. (2017), Kurtmollaiev (2020), Lopez-Cabrales et al. (2017), Kevill et al. (2017), Tallott and Hilliard (2016), MacLean et al. (2015), Del Mar Alonso-Almeida (2017), Helfat and Martin (2015), MacLean et al. (2015), Helfat and Petraff (2015), Pablo et al. (2007), Teece (2012), Fernandez and Wise (2010) and Jas and Skelcher (2005)
Organisational communication between people within the organisation, relationships with people outside the organisation, emotional communication, empathetic communication, respectful communication, creating a link between the organisation's routines and individuals, deeper linkage between individual actions of managers or small groups in the organisation with dynamic capabilities and long-term performance, communication networks.	Communication	7	Hilliard and Goldstein (2018), Nagel (2017), MacLean et al. (2015), Argote and Ren (2012), Teece (2012), Felin and Foss (2012) and Vera and Crossan (2005)
Facilitating and reinforcing social capital, facilitating and reinforcing human capital, human capital, social capital, social capital of managers (networking relationships, relationship management, networking characteristics of relationships, etc. human capital of managers (teaching, work experience, etc.), intellectual capital, human capital, communication capital, structural capital, reinforcing social capital, human capital, cultural intelligence, cultural intelligence capability, cultural intelligence situation capability, cultural intelligence path capability, cross-cultural integration coordination, cultural reconfiguration.	Organisational capital and intelligence	7	Huy and Zott (2019), Mudalige et al. (2018), Helfat and Martin (2015), Hsu and Wang (2010), Huang et al. (2009), Molina-Azorín (2014) and Moon (2010)

Table 4 Raw and final codes extracted from the final articles of behavioural foundations of dynamic capabilities (continued)

Raw codes	Final code	Repetition in the reviewed sources	Citations
Conflicts such as lack of a link between knowledge acquired through learning and execution of processes, conflict management, confronting conflicting beliefs, confronting employees' ideas and prejudices, confronting value challenges, managing tensions.	Conflict management	8	Appleyard et al. (2020), Huy and Zott (2019), Tran et al. (2018), Gagné (2018), Schoemaker et al. (2018), Kurtmollaiev (2020), Nagel (2017) and Pablo et al. (2007)
Intuitive thinking, intuitive decision makings, cognitive perceptions and interpretations of individuals, affective-emotional cognition, employees' cognitive processes, emotional and cognitive reflection space within work teams, neurocognitive patterns, cognitive biases, psychological and cognitive aspects, cognitive perceptions and interpretations of individuals, adaptation and relaxation, high activity and attempts to change the status quo, moving forward, pro-environmental attitude and identity, employees' mental efforts, employees' cognitive processes.	Intuition and cognition	11	Appleyard et al. (2020), Schwarz et al. (2020), Tran et al. (2018), Kurtmollaiev (2020), Strauss et al. (2017), Nagel (2017), MacLean et al. (2015), Molina-Azorín (2014), Hodgkinson and Healey (2011) and Verona and Zollo (2011)
Job development, organisational commitment, job dissatisfaction, intention to quit the organisation, organisational trust, culture of the organisation, employees' commitment to search for new routines.	Job attitude	7	Eşitti and Kasap (2020), Gagné (2018) Hilliard and Goldstein (2018), Kurtmollaiev (2020), Fainshmidt and Frazier (2016), Tallott and Hilliard (2016), Argote and Ren (2012) and Hanifah et al. (2020, 2017).
Team works, work teams and teamwork, work teams, team cooperation, teamwork, effective team for cooperation, cross-functional teams, knowledge sharing in organisations, teams and individuals, increased group self-confidence, number of team members, trust, ability of team members to work together comfortably and effectively, team commitment, team leadership, teamwork autonomy, teamwork cohesion, teamwork integration.	Teamwork	11	Appleyard et al. (2020), Gonzalez and de Melo (2020), Hilliard and Goldstein (2018), Strauss et al. (2017), Nagel (2017), Del Mar Alonso-Almeida (2017), Ridder et al. (2005), Argote and Ren (2012), Huang et al. (2009), Vera and Crossan (2005) and Daniel and Wilson (2003)
Self-regulation, emotional regulations, modifying one's emotions, modifying and regulating others' emotions, self-regulatory emotional responses, self-regulation, managers' emotional regulations, modifying and regulating others' emotions, affective-emotional cognition, affective support, emotional commitment, organisational interactive memory system.	Sensory-cognitive regulations	4	Gagn´e (2018), Huy and Zott (2019), Argote and Ren (2012) and Hodgkinson and Healey (2011)
Social environment of the organisation, organisational health	Organisational atmosphere	2	Kurtmollaiev (2020) and Fainshmidt and Frazier (2016)

Table 4 Raw and final codes extracted from the final articles of behavioural foundations of dynamic capabilities (continued)

| Raw codes	Final code	Repetition in the reviewed sources	Citations
Skill-based human resources management systems, task-based human resources management systems, the willingness of team members to remember different aspects of a job or the development of specialised and complementary skills, human dimensions, empowering managers and employees, creating and sharing a common vision among employees of the organisation, role clarity, emphasis on human resources, human resource specialist, empowerment, improvement of staff attitudes and perspectives, training.	Human resources management	6	Lopez-Cabrales et al. (2017), Argote and Ren (2012), Verona and Zollo (2011), Fernández and Wise (2010), Ridder et al. (2007) and Vera and Crossan (2005)
Developing areas that facilitate dialogue, partnership, and constructive opposition, social interactions, understanding patterns from multiple data points, evaluating, filtering, expanding and aligning perspectives, promoting open dialogue in cases of disagreement, suggestion systems, discourse, interaction with stakeholders, employees' social exchange, language, redefining individuals' social identities.	Discourse and feedback space	11	Roy (2020), Salvato and Vassolo (2018), Tran et al. (2018), Schoemaker et al. (2018), Strauss et al. 2017), Nagel (2017), Del Mar Alonso-Almeida (2017), Fainshmidt and Frazier (2016), Helfat and Petraff (2015), Hodgkinson and Healey (2011) and Pablo et al. (2007)
Motivation, motivational dynamics	Motivation	3	Gagné (2018), Verona and Zollo (2011) and Ridder et al. (2007)
Employees' talent management, reform-oriented talent management, complex talent management, socialisation, goal internalisation, competence needs, autonomy needs, values appropriateness, coordination of employee efforts, coordination of functional groups, resistance to change, uncertainty anxiety, encouragement of personal initiative, employees' perception of readiness to change, reduced resistance to change, participation, diversity management.	Talent management, capacity building and staff diversity	8	Harsch and Festing (2020), Gagné (2018), Fainshmidt and Frazier (2016), Argote and Ren (2012), Verona and Zollo (2011), Pablo et al. (2007), Jones et al. (2005) and Tallott and Hilliard (2016)
Creating a link between knowledge acquired through learning and implementing processes, knowledge sharing among organisations, teams and individuals, knowledge acquisition.	Knowledge management	3	Tran et al. (2018), Molina-Azorín (2014) and Huang et al. (2009)

Having studied the reviewed articles, all behavioural micro foundations of dynamic capabilities in the articles were extracted using contextual content analysis and relying on the researchers' understanding of all human and behavioural dimensions (such as individual factors, human resources management processes and individual and group organisational behaviour), and were organised into codes extracted from the reviewed articles. The part of open coding is presented in Table 3 (of ten articles), with the number of repeating codes being 214.

Having categorised and eliminated repeating items of the raw codes extracted from the reviewed articles, 214 codes were grouped into 20 ultimate codes. In fact, the researchers performed the classification relying on reviewing and analysing raw extracted codes several times during a reciprocal process and in accordance with the concepts and literature of organisational behaviour and human resources. Table 4 displays this classification.

5   Findings

Based on the final codes extracted from the research background presented in Table 4, 15 extraction indices can be organised into three dimensions of sensing, seizing, and reconfiguring (Figure 2). Regarding the placement of indicators in the three mentioned dimensions, the researchers used the literature and previous studies, and by examining the reviewed studies several times, tried to optimally locate the indicators in three dimensions of 'sensing', 'seizing', and 'reconfiguring'. In some cases, certain indicators could be located in two dimensions. The 'communication' index, for instance, could be embedded in the two dimensions of 'seizing' and 'reconfiguring' as evidenced by previous studies. However, as the 'seizing' aspect of the role of this indicator was highlighted, and the significance of interpersonal and group relationships at the seizing stage underpinned the development of more opportunities, the indicator was placed in the 'seizing' dimension (Hilliard and Goldstein, 2019; Nagel, 2017).

The sensing (perception) dimension includes 'personal and interpersonal indicators', 'intuition and cognition', 'sensory-cognitive regulations', and 'job motivation and job attitude'. Personal and interpersonal indicators include components such as 'creating change by strengthening personal attitudes, norms, habits and integration as well as increasing capacity, the quality of individual behaviours, improving employees and individuals' attitudes, individuals' attitudes, individuals' behaviour, human emotions and feelings, sharing ideas and insights, shared mental assumptions, shared mental models, negative emotions (fear and anxiety as a result of choice uncertainty, self-defence patterns), unconscious inner preferences, the atmosphere that influences the formation of attitudes, norms, behaviours and interactions of employees, individuals' creativity, cognition and motivation, frustration and anger, hope and emotion, etc. interpersonal relationships, coordination between individuals and routines, individual entrepreneurship orientation, accountability and digital literacy (Appleyard et al., 2020; Salvato and Vassolo, 2018; Mudalige et al., 2019; Jahanshahi et al., 2018; Hilliard and Goldstein, 2019; Gagné, 2018; Kurtmollaiev, 2020; Nagel, 2017; MacLean et al., 2015; Verona and Zollo, 2011; Ridder et al., 2007).

Figure 2 Behavioural foundations of dynamic capabilities based on systematic review
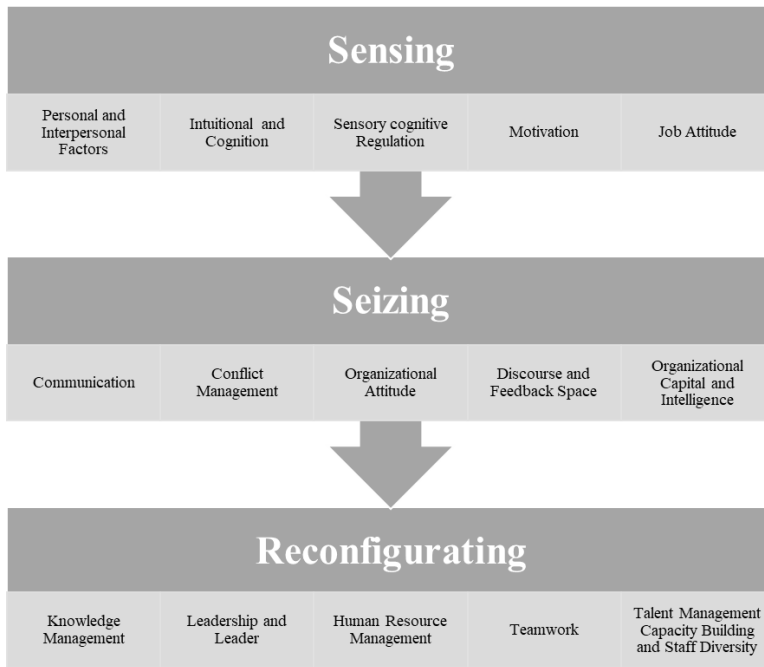
Similarly, with regard to the 'intuition and cognition' index, the components of intuitive thinking, intuitive decision makings, cognitive perceptions and interpretations of individuals, affective-emotional cognition, employees' cognitive processes, emotional and cognitive reflection space within work teams, neurocognitive patterns, cognitive biases, psychological and cognitive aspects, cognitive perceptions and interpretations of individuals, adaptation and relaxation, high activity and attempts to change the status quo, moving forward, pro-environmental attitude and identity, employees' mental efforts, employees' cognitive processes, emotional and cognitive reflection space within work teams, neurocognitive patterns, cognitive biases, and psychological and cognitive aspects can be mentioned (Appleyard et al., 2020; Tran et al., 2018; Kurtmollaiev, 2020; Strauss et al., 2017; Nagel, 2017; MacLean et al., 2015; Molina-Azorín, 2014; Hodgkinson and Healey, 2011; Vrbová and Müllerová, 2021; Verona and Zollo, 2011). On the 'sensory-cognitive regulations', the components of self-regulation, emotional regulations, modifying one's emotions, modifying and regulating others' emotions, self-regulatory emotional responses, self-regulation, managers' emotional regulations, modifying and regulating others' emotions, affective-emotional cognition, affective support, emotional commitment, and organisational interactive memory system can be enumerated based on the available literature (Eşitti and Kasap, 2020; Gagné, 2018; Argote and Ren, 2012; and Hodgkinson and Healey, 2011). Furthermore, in the case 'motivation' index, components such as motivation and motivational dynamics were addressed in the literature (Gagné, 2018; Verona and Zollo, 2011; Ridder et al., 2007). Finally, regarding the 'sensing' dimension, the 'job attitude' index was addressed with components such as job development, organisational commitment, job dissatisfaction, intention to leave the organisation, organisational trust, confidence building capabilities, culture of the

organisation, and employees' commitment to search for new routines (Hanifah et al., 2019; Gagné, 2018; Hilliard and Goldstein, 2019; Kurtmollaiev, 2020; Tallott and Hilliard, 2016; Argote and Ren, 2012). As for the 'cognition (seizing)' dimension, indicators of 'communication', 'conflict management', 'organisational climate', 'space for discourse and feedback' and 'capital and organisational intelligence' were discussed. The 'communications' index involved components such as organisational communication between people within the organisation, communication with people outside the organisation, emotional communication, empathetic communication, respectful communication, creating a link between the organisation's routines and individuals, deeper linkage between individual actions of managers or small groups in the organisation with dynamic capabilities, long-term performance, and communication networks (Hakkak et al., 2021; Hilliard and Goldstein, 2019; Nagel, 2017; MacLean et al., 2015; Argote and Ren, 2012; Teece, 2012; Felin and Foss, 2012; Vera and Crossan, 2005). In the 'conflict management' index, the components of lack of a link between knowledge acquired through learning and execution of processes, conflict management, confronting conflicting beliefs, confronting employees' ideas and prejudices, confronting value challenges, and managing tensions were examined (Appleyard et al., 2020; Tran et al., 2018; Gagné, 2018; Schoemaker et al., 2018; Kurtmollaiev, 2020; Nagel, 2017; Pablo et al., 2007). Similarly, the 'organisational climate' index applied to two components of organisational social climate and organisational health in the reviewed studies (Kurtmollaiev, 2020).

The 'discourse and feedback space' index focused on the components of dialogue, partnership, and constructive opposition, social interactions, understanding patterns from multiple data points, evaluating, filtering, expanding and aligning perspectives, promoting open dialogue in cases of disagreement, suggestion systems, discourse, interaction with stakeholders, employees' social exchange, language, redefining individuals' social identities, and trust-based relationships (Roy, 2020; Salvato and Vassolo, 2018; Tran et al., 2018; Schoemaker et al., 2018; Strauss et al., 2017; Nagel, 2017; Del Mar Alonso-Almeida, 2017; Vrbová and Müllerová, 2021; Helfat and Petraff, 2015; Moreno-López and Torres, 2020; Hodgkinson and Healey, 2011; Pablo et al., 2007). Finally, the 'organisational capital and intelligence' index applied in the case of components such as facilitating and reinforcing social capital, facilitating and reinforcing human capital, human capital, social capital, social capital of managers (networking relationships, relationship management, networking characteristics of relationships, etc. human capital of managers (teaching, work experience, etc.), intellectual capital, human capital, communication capital, structural capital, reinforcing social capital, human capital, cultural intelligence, cultural intelligence capability, cultural intelligence situation capability, cultural intelligence path capability, cross-cultural integration coordination, cultural reconfiguration, cultural intelligence situation capability, and cultural intelligence path capability (Altuntas et al., 2021; Mudalige et al., 2019; Helfat and Peteraf, 2015; Hsu and Wang, 2012; Huang et al., 2009; Molina-Azorín, 2014; Moon, 2010).

The 'reconfiguring' index involved the indicators of 'knowledge management', 'leadership and the individual leader', 'human resource management', 'teamwork', and 'management of talent, capacity building and diversity of employees'. Meanwhile, 'knowledge management index' involved the components of creating a link between knowledge acquired through learning and implementing processes, knowledge sharing among organisations, teams and individuals, knowledge acquisition, knowledge management capabilities, managers' organisational knowledge network, and the intention

of enhancing subscription renewal or improving knowledge utilisation (Appleyard et al., (2020; Gonzalez and de Melo, 2020; Dehghanan et al., 2021; Tran et al., 2018; Zenkevich and Kazemi, 2020; Molina-Azorín, 2014; Huang et al., 2009).

The 'leadership and the leader' index in the reviewed literature addressed components such as leadership, transformational leadership style, transformational leadership, exchange leadership, supportive leadership style, leadership ability, leadership capability, leader's prediction, leader's challenge identification, leader's decision making, leader's learning, leader's alignment, leader's interpretation of the conditions, perceived self-efficacy of the leader, manager's environmental perception, managers' perception of the value of change, dynamic capabilities of the manager, manager's individual competencies and skills, creating a collaborative environment by the manager, manager's social commitment, managerial cognition (mental models such as beliefs, mental processes such as attention, perception, etc.) managerial cognitive ability, managers' physical and mental performance capacity, dynamic management skills for assessing, capturing and reviewing opportunities, managers' attention and perception, managers' problem solving ability, managers' social cognition, managers' reasoning ability, managers skills, managers' skills and commitment to identify, empower and manage the deployment of dynamic capabilities, managers' individual role, entrepreneurial approach of managers, managers' individual decisions, managerial maturity, and the manager's core competencies (Eşitti and Kasap 2020; Schoemaker et al., 2018; Strauss et al., 2017; Kurtmollaiev, 2020; Lopez-Cabrales et al., 2017; Kevill et al., 2017; Tallott and Hilliard, 2016; MacLean et al., 2015; Del Mar Alonso-Almeida, 2017; Helfat and Martin, 2015; Helfat and Peteraf, 2015, Pablo et al., 2007, Teece, 2012; Fernández and Wise 2010; Jas and Skelcher, 2005).

Human resource management index in the literature indicated the components of skill-based human resources management systems, task-based human resources management systems, the willingness of team members to remember different aspects of a job or the development of specialised and complementary skills, human dimensions, empowering managers and employees, creating and sharing a common vision among employees of the organisation, role clarity, emphasis on human resources, human resource specialist empowerment, improvement of staff attitudes and perspectives, training, and development of human resources, and meritocracy in the personnel (Ugras et al., 2021; Lopez-Cabrales et al., 2017; Argote and Ren, 2012; Verona and Zollo, 2001; Fernández and Wise, 2010; Ridder et al., 2007; Vera and Crossan, 2005).

'Teamwork' index in the reviewed literature applied in the case of components of team works, work teams and teamwork, work teams, team cooperation, teamwork, effective team for cooperation, cross-functional teams, knowledge sharing in organisations, teams and individuals, increased group self-confidence, number of team members, trust, and ability of team members to work together comfortably and effectively (Hilliard and Goldstein, 2019; Strauss et al., 2017; Nagel, 2017; Del Mar Alonso-Almeida, 2017; Ridder et al., 2005; Argote and Ren, 2012; Hung et al., 2009; Vera and Crossan, 2005; Wilson and Daniel, 2007). Finally, the 'talent management, capacity building and staff diversity' index in the reviewed literature referred to the components of employees' talent management, reform-oriented talent management, complex talent management, socialisation, goal internalisation, competence needs, autonomy needs, values appropriateness, coordination of employee efforts, coordination of functional groups, resistance to change, uncertainty anxiety,

encouragement of personal initiative, employees' perception of readiness to change, reduced resistance to change, participation and diversity management (Harsch and Festing, 2020; Gagné, 2018; Tallott and Hilliard, 2016; Jahanshahi et al., 2020; Argote and Ren, 2012; Verona and Zollo, 2011; Pablo et al., 2007; Jones et al., 2005).

Cohen's kappa coefficient was used to validate the extracted model. For this purpose, four experts in the field of technology management were asked to rate the proposed model and its various dimensions in a three-point scale (poor, moderate, and good) to each of their dimensions, and comment on the validity of these cases. Finally, these answers are tested with Cohen's kappa coefficient as described in Table 5.

Table 5   Cohen's kappa coefficient for validation of the developed model from experts' view

Cohen's Kappa coefficient	Quantity	Standard error	t value	Significance level
	0.79	0.039	4.41	0.032

Therefore, since the significance level is below 0.05 and the kappa statistic is above 0.7, the validity of the model was also confirmed. It is noteworthy to mention that the kappa value above 0.6 is also acceptable, which in the present study, the level above 70, which is a very desirable level, was approved.

6   Discussion and conclusions

The vision of dynamic capabilities is designed to explain how to achieve and maintain the benefits of companies over competitive advantages, especially in environments that are volatile, uncertain, complex, and ambiguous. In this regard, the purpose of this article was to systematically review the literature on the behavioural foundations of dynamic capabilities in articles written in the period of 2000–2020 and to extract behavioural foundations of dynamic capabilities from them. In fact, the main reason for considering micro foundations was to understand how individual and behavioural foundations influence performance at the macro level of an organisation. How relationships between organisational macro levels are influenced by the micro-actions, behaviours and group interactions at the micro and meso levels have been the key reason for considering the micro and meso foundations of the organisation (Abell et al., 2008). Some contextual and underlying micro and meso-level dimensions in an organisation include human-behavioural foundations, such as types of behaviours, cognitions, attitudes at the individual level and interactions, partnerships, dialogues, communication capitals, etc. at the group level that allow individuals to systematically identify the need for change in the organisation's practices and capabilities (Verona and Zollo, 2011). Likewise, in terms of micro-behavioural foundations of dynamic capabilities, it can be acknowledged that the ability to redirect dynamic capabilities is possible when employees reach a high level of ability, and using their creativity, can predict opportunities to improve the performance of the company and change its practices. These foundations stimulate the dynamics of organisational resources, and pave the way for the creation of dynamic capabilities (Salvato and Vassolo, 2018).

In this regard and based on main purpose of research (i.e., to extend the normative view of dynamic capabilities theory), the systematic review of studies of the behavioural foundations of dynamic capabilities in this study, show that 15 main human-behavioural categories were identified as behavioural foundations of dynamic capabilities in the three

dimensions of sensing, seizing, and reconfiguring. This study and its classification are important because it creates a new perspective on the context that can facilitate the emergence of dynamic capabilities at the organisational macro level. In fact, this study explains what behavioural and human dimensions focus on in each of the three dimensions of sensing, seizing, and reconfiguring, which can uniquely enable organisations to adapt to profound change and the ability to change capabilities and make them dynamic. The ultimate goal of this article is to expand our understanding of the importance of behavioural and human factors such as intuition and cognition, individual and interpersonal factors, individual leadership, communication, capital and organisational intelligence, conflict management, job attitudes, teamwork, cognitive settings and organisational atmosphere. Organisational, human resource management processes, discourse and feedback space, motivation and capacity building, diversity management and talent management, in creating dynamic capabilities at the strategic level of the organisation to gain competitive advantage and solve the black box between the optimal effect of dynamic capabilities on organisational performance which aligns with Kevill et al. (2017), Salvato and Rerup (2011), and Winter (2003) studies.

From an analytical view, this article creates a cognitive and psychological capacity to better understand the foundations of dynamic capabilities in organisations that enable top managers and decision makers to take full advantage of opportunities to change the organisation by relying on its capabilities in highly evolving environments. The change improves by relying on human behaviours and dimensions in the organisation and helps them to better understand the endogenous resources that can facilitate strategic management and enhance the capacity for change.

The contribution of this research is to integrate all the studies in the field of behavioural and human factors that affect the improvement of dynamic capabilities in organisations, and by creating a new and comprehensive conceptual framework, this research can present guideline for future research to be applied in organisations. The organisation's individual, team, and group beliefs, behaviours, and actions are the most important factor in an organisation's success or failure in shaping dynamic capabilities to competitive advantage, and this view is a normative view of dynamic capabilities theory (Carlyle and Christensen, 2005) that can complete this theory and give it a more operational aspect, just as Helfat and Peteraf (2015), Gagné (2018), Salvato and Vazolo (2018), Kurtmollaiev (2020) linked the micro and macro level of the organisation to better formulate dynamic capabilities in all three sensing dimensions, emphasised seizing and reconfiguring.

The present study was a cross-sectional and the variables were studied in only one time period. The behavioural and human foundations of an organisation may vary during different political, cultural, and economic periods, which may be the subject of future research.

Given that researchers in the field of dynamic capabilities studies always emphasise on moving from a descriptive point of view to normative and complementary perspectives, Obviously, the study had certain limitations, too, and due to the interpretive approach employed in the study, different researchers can act differently in their interpretations of human and behavioural foundations, as well as in the classification of extracted primary categories into final categories. In fact, these can also be suggestions for future research. Future researchers are advised to first consider the impact of different political, cultural and economic situations. The difference in organisational procedures, to

examine the behavioural and human foundations of organisations with regard to this case and also to test the model presented in this research together or to test each of the three dimensions in organisations.

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