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ORIGINAL PAPER

The associations between management control systems, organisational capabilities and performance

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Abstract
This study examines the associations between Simons' (Levers of control: how managers use innovative control systems to drive strategic renewal. Harvard Business Press, Brighton, 1995) positive systems (belief systems and interactive control systems) and two organisational capabilities (organisational resilience and workplace flexibility), and the subsequent impact of these capabilities on organisational performance. Based upon the survey responses received from the managers of 337 Australian organisations, we found that the use of both belief systems and interactive control systems are positively associated with the level of organisational resilience and workplace flexibility, which in turn, exhibit a significant positive effect on organisational performance. In addition, the two organisational capabilities are found to mediate the associations between the positive systems and organisational performance. The findings suggest that organisations should place greater emphasis on the use of positive systems and endeavour to develop and enhance organisational resilience and workplace flexibility to facilitate organisational performance.

Keywords Management control system · Positive systems · Organisational resilience · Workplace flexibility · Organisational performance

1 Introduction

There has been an increase in the occurrence and severity of external disturbances that threaten the viability and performance of organisations including financial crises, social movements, natural catastrophes, terrorism, supply chain disruptions (DesJardine et al., 2019; Williams et al., 2017), and most recently, the COVID-19 global pandemic. This pandemic has had an enormous economic and social impact and radically affected organisations worldwide (Bedford et al., 2022; Goodell,

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2020), with the world output shrinking by 4.3% in 2020, more than three times the impact of the 2008 global financial crisis (United Nations, 2021). We posit that organisations need to build appropriate organisational capabilities[1] to withstand and navigate through such crises successfully. Accordingly, in response to the call from Leoni et al. (2021) for accounting and management studies to address the implications of large-scale global crises, this study seeks to provide an empirical insight into the antecedents and consequences of two specific organisational capabilities, namely, organisational resilience and workplace flexibility.

Organisational resilience reflects the ability of organisations to resist and respond to an internal or external shock and recover once it has occurred (Annarelli & Nonino, 2016). As organisational resilience requires organisations to "develop the capability to maintain function during periods of adversity and develop the ability to effectively respond to unexpected events when required" (Burnard & Bhamra, 2019, 21), we view organisational resilience as an organisational level dynamic capability which is expected to influence organisational performance. Similarly, workplace flexibility, which refers to the ability of organisations and their employees to make choices influencing when, where, and for how long the employees engage in work-related activities (Hill et al., 2008), is regarded as an organisational capability, as such flexibility reflects the capability of organisations to manage their work-related activities in a way which enables them to better adapt to change and respond to shifting environmental situations (Cabral & van Winden, 2022). The virtues of workplace flexibility came to the fore during the recent COVID-19 pandemic when workers were forced to work in a unique working environment, with some organisations better equipped than others to utilise such flexible workplace arrangements.

Workplace flexibility refers to the organisation's ability to change at relatively short notice and at a low cost and is often part of the ongoing configuration of organisational strategy to increase maneuverability in a changing environment, whereas organisational resilience is concerned with the ability of the organisation to recover, renew and transform in response to unexpected and disruptive events (Lengnick-Hall et al., 2011; Zhou et al., 2022). The focus on organisational resilience and workplace flexibility is pertinent due to their perceived high relevance to organisations. In particular, understanding why some organisations are resilient and flexible while others are not, and how organisations can enhance their organisational resilience and workplace flexibility to effectively prepare for and respond to the inevitable adversity in their business environment has become a key issue in strategic management research (Annarelli & Nonino, 2016; Iborra et al., 2020).

Grounded in the dynamic capability theory which posits that "dynamic capabilities can be used to enhance existing resource configurations in the pursuit of long-term competitive advantage" (Eisenhardt & Martin, 2000), we propose that the use

[1] Organisational capabilities here refer to "the particular combination of skills, competencies, resources, routines and behaviours of an organisation that enables it to perform an activity in a reliable manner to achieve a (satisfactory) determined outcome" (Leiringer & Zhang, 2021, p. 423).

of management control systems (MCSs)[2] will enhance organisational resilience and workplace flexibility, as dynamic capabilities, in a way which assists in the pursuit of superior performance. In other words, the use of MCSs contributes positively to the deployment and exploitation of organisational capabilities leading to improved organisational performance.[3] Therefore, the objective of this study is to examine how MCSs are used to facilitate the development of organisational resilience and workplace flexibility, and the subsequent impact of these capabilities on organisational performance.

The study contributes to the organisational capabilities literature by providing an empirical insight into the role of MCSs in enhancing organisational resilience and workplace flexibility. While prior studies have attempted to examine the factors that foster organisational resilience, such as social and environmental practices (DesJardine et al., 2019; Ortiz-de-Mandojana & Bansal, 2016), human resource management practices (Lengnick-Hall et al., 2011; Rodríguez-Sánchez et al., 2021), and good governance and balanced growth (Carmeli & Markman, 2011), empirical evidence of the antecedents of organisational resilience is still limited (King et al., 2016; Linnenluecke, 2017). Similarly, the literature examining the antecedents of workplace flexibility is limited to studies that focus on individual or social aspects such as employees' family responsibilities, supervisory responsibilities (De Sivatte & Guadamillas, 2013), individual characteristics, home and family characteristics, and community characteristics (Hill et al., 2008). Hence, as organisational resilience and workplace flexibility are capabilities that can be developed and managed within the organisation, rather than static characteristics, we address calls for organisational research on the antecedents of these capabilities (Linnenluecke, 2017; Van Der Vegt et al., 2015; Williams et al., 2017) through examining the role of MCSs in influencing these capabilities.

In line with prior studies which assert that a greater understanding of the role of MCSs could be achieved by focusing on the style of controls, rather than the existence of specific tools or aspects of MCSs (Abernethy et al., 2010; Arjaliès & Mundy, 2013; Langfield-Smith, 1997), this study utilises Simons' (1995) levers of control. The majority of empirical studies have examined the effect of specific styles of control, generally the diagnostic and interactive control systems (Henri, 2006; Hofmann et al., 2012; Mundy, 2010; Nuhu et al., 2019). This study contributes to the MCS literature through providing an insight into the influence of Simons' (1995) positive systems (belief systems and interactive control systems) on organisational capabilities. We focus on positive systems as these systems promote creativity, innovation, flexibility and information sharing and learning (Tessier & Otley, 2012), which will assist organisations in coping with the high uncertainty and environmental turbulence experienced during the COVID-19 pandemic. In particular, positive systems

[2] The use of controls represents a way in which organisations can configure the use of organisational resources in a way which facilitates organisational resilience and workplace flexibility.

[3] While Peters et al. (2019) conceptualise interactive profit-planning systems as a dynamic capability, in line with Henri (2006) this study views the MCS as an antecedent factor which facilitates the enhancement of the two organisational capabilities i.e. organisational resilience and workplace flexibility.

"create positive and inspirational forces in the strategy implementation and renewal process" (Heggen, 2014, p. 51), which will assist organisations in adapting to and enhancing their organisational capabilities i.e. resilience and workplace flexibility. Alternatively, while negative systems (i.e. boundary and diagnostic control systems) can also assist organisations in coping with environmental uncertainty, their emphasis is on "monitoring and controlling actions to achieve organisational goals" (Baird & Tung, 2023, p. 3) and hence, such systems are more restrictive and constraining, and not as conducive to enhancing organisational capabilities.

While there have been various perspectives influencing the definitions and conceptualisations of organisational capabilities, a common theme is the fundamental underlying assumption that organisational capabilities influence performance-related outcomes (Leiringer & Zhang, 2021). Therefore, this study also aims to validate this assumption by empirically examining the association between organisational resilience and workplace flexibility with organisational performance. The findings contribute to the organisational resilience literature given that empirical evidence on the outcomes or consequences of resilience is scarce, with much of the research focusing on individual-level outcomes, such as job performance, productivity, commitment (Kim, 2020; Luthans et al., 2005; Rodríguez-Sánchez et al., 2021), and the limited number of studies examining the impact of resilience at the organisational level (e.g., Akgün & Keskin, 2014; McCann et al., 2009; Prayag et al., 2018) mainly focusing on financial performance. The study also contributes to the organisational flexibility literature in which there are mixed findings regarding the impact of workplace flexibility on performance (de Menezes & Kelliher, 2011).

The remainder of the paper is organised as follows. The next section provides an overview of Simons' (1995) levers of control framework and develops the relevant hypotheses. The subsequent section discusses the research method and data collection process, followed by the results. Finally, the last section presents the conclusions, limitations and suggestions for future research.

2 Literature review and hypotheses development

2.1 Simons' (1995) positive systems

Simons (1995, p. 5) defines MCSs as the "formal, information-based routines and procedures managers use to maintain or alter patterns in organisational activities", with prior research focusing on the role of MCSs in assisting managers in achieving desirable organisational goals or outcomes (Chenhall, 2003). Accordingly, Simons (1995) proposed a levers of control framework which examines how managers use four levers of control (belief systems, boundary systems, diagnostic control systems, and interactive control systems) to transmit and process information within organisations.

According to Simons (1995), belief systems include an explicit set of organisational definitions, such as mission statements or visions statements, that senior managers communicate formally and reinforce systematically to provide the core values, purpose and direction for the organisation. The purpose of belief systems is

to inspire employees' commitment towards achieving organisational goals and to stimulate their engagement in opportunity-seeking behaviour. Boundary systems, on the other hand, are used to set limits on opportunity-seeking behaviour and include the formally stated rules and guidelines, commonly expressed in negative or minimum terms, that senior managers use to inform employees of the acceptable activities and the risks to be avoided. Diagnostic control systems are feedback systems that monitor organisational outcomes by comparing performance against pre-set targets. Finally, interactive control systems are used by senior managers to involve themselves regularly and personally in the decision-making process of lower-level managers, in order to encourage the sharing of emerging information and promote continual learning.

Simons (2000) considers boundary systems and diagnostic control systems as negative systems which are used to constrain search behaviour and ensure rules compliance. These systems emphasise the management of well-understood, routine issues and the achievement of predictable goals (Ahrens & Chapman, 2004). Alternatively, belief systems and interactive control systems are regarded as positive systems which assist employees in searching creatively and expanding opportunities and allow managers to focus on strategic uncertainties (i.e., future threats and opportunities) (Simons, 2000). As previously discussed, this study focuses on the use of positive systems.

2.2 Organisational capabilities

2.2.1 Organisational resilience

The general concept of resilience is rooted in the ecology literature with Holling (1973) defining it as the ability of a system to absorb changes and persist after an external shock. The term has evolved over time and spanned across various disciplines including psychology which refers to the ability of individuals to recover from the effects of environmental stressors (Bonanno, 2012; Rutter, 1987), engineering which focuses on the ability of structures to endure significant environmental disasters such as floods or earthquakes (Dinh et al., 2012; Hollnagel et al., 2006), and economics which refers to the ability of markets to recuperate from an economic crisis (Kyle, 1985; Rose, 2004). While the study of resilience in organisational settings has mainly focused on the individual level (i.e. employee resilience) (Zhou et al., 2022), this study examines resilience at the organisational level since our emphasis is on the development of organisational capabilities.

In the management and organisation literature, the term organisational resilience has developed from a simple concept of resistance to shocks and disasters, to a more complex one which includes the notions of recovery ability, recovery times, and costs of recovery (Annarelli & Nonino, 2016). Gunderson and Pritchard (2012, p. 6) define organisational resilience as "both the ability of a system to persist despite disruptions and the ability to regenerate and maintain [the] existing organisation". Lengnick-Hall et al., (2011, p. 244) describe resilience as the organisation's "ability to effectively absorb, develop situation specific responses to, and ultimately

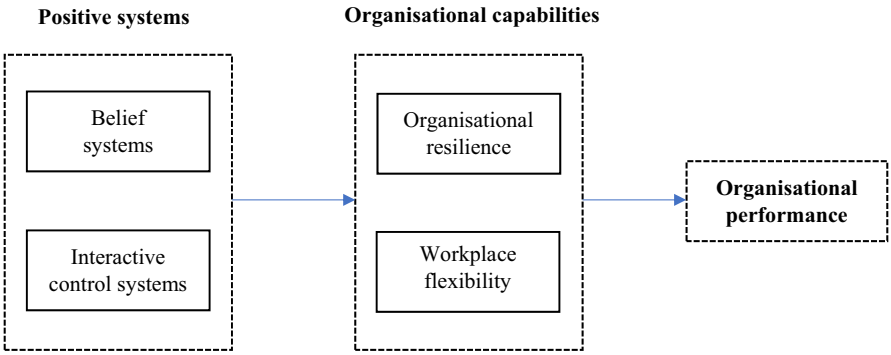

Fig. 1 Conceptual model

engage in transformative activities to capitalise on disruptive surprises that potentially threaten organisation survival". Organisational resilience entails two important properties: stability, which is the ability of the organisation to maintain their core attributes and functions in the face of environmental changes, and adaptability which is the ability to innovate and adapt to these changes (DesJardine et al., 2019). Prayag et al. (2018) also emphasise strong leadership and the ability of employees to cover multiple roles as important characteristics of organisational resilience.

2.2.2 Workplace flexibility

According to a systematic review of the literature on workplace flexibility by Bal and Izak (2021), there are four types of workplace flexibility: organisational flexibility (the ability of organisations to adapt to changes in their environment), employee flexibility (the ability of employees to adapt to changes in their work or in their organisation), work flexibility (the adaptability of employee contracts to allow for greater adjustability to changing circumstances), and flexible workplace arrangements (the organisational practices that help employees to decide when and where work is conducted). In examining workplace flexibility, this study focuses on flexible workplace arrangements, as they are generally theorised to provide significant benefits to both employees and organisations (Bal & Izak, 2021). In particular, based on the Australian Government's (2020) guidelines, we operationalise workplace flexibility in respect to the extent to which each of five different work arrangements existed in organisations during the COVID-19 pandemic (i.e., during the year 2020): flexible hours of work, compressed working weeks, time in lieu (of overtime), purchased leave, and telecommuting.

2.3 Hypotheses development

Figure 1 presents the conceptual model of the paper. Sections 2.3.1 and 2.3.2 discuss the associations between belief systems with the two organisational capabilities, organisational resilience and workplace flexibility. Sections 2.3.3 and 2.3.4

then discuss the association between interactive control systems with organisational resilience and workplace flexibility. The final two Sects. 2.3.5 and 2.3.6 then discuss the associations between the two organisational capabilities and organisational performance.

2.3.1 Belief systems and organisational resilience

McCann et al. (2009) posit that building a strong sense of valued identity, common purpose and shared beliefs is essential to building resilience i.e. the capability of organisations to respond to unexpected events. For instance, an enhanced understanding of the organisation's core values and direction, achieved through a well-designed belief system, contributes to the stability of the organisation during disturbances i.e. their ability to maintain function during adversity (Burnard & Bhamra, 2019). Further, Williams et al. (2017) suggest that a constructive conceptual orientation (e.g., vision, strong values, sense of purpose) assists organisations in recognising the signals of potential disturbances and absorbing new information creatively and flexibly to resolve problems and maintain functioning in the face of adversity.

Belief systems can inspire and motivate employees to search for and create new opportunities which add value to the organisation (Simons, 1995), thereby promoting the organisation's capability to respond to environmental changes i.e. resilience. In addition, due to the importance of resources and knowledge[4] in enhancing organisational capabilities (Bitencourt et al., 2020; Glyptis et al., 2021), and the fact that decisions relating to the allocation of resources and the development of knowledge are expected to align with the core values of organisations (Glyptis et al., 2021), belief systems can be used to enhance organisational capabilities. For instance, strong belief systems can ensure that resources are devoted to enabling an organisation and its employees to focus on developing their capability to effectively respond to unexpected events i.e. their resilience. In particular, the provision of sufficient resources is considered to be a "key element for understanding the environment and proposing creative solutions to problems resulting from changes in the market" (Bitencourt et al., 2020, p. 117). Belief systems can also encourage and facilitate the enhancement of knowledge and learning[5] throughout organisations with the subsequent development of new ideas, application of solutions to new contexts, and development of a better sense of how to respond to future unexpected events, enhancing the capability of organisations to effectively respond to unexpected events i.e. higher organisational resilience (Bitencourt et al., 2020).

Hence, through communicating the core values, purpose and direction of the organisation, belief systems can assist organisations in developing shared beliefs which enhances their ability to identify, respond and cope with disturbances appropriately and proactively adapt to environmental opportunities (i.e. be more resilient).

[4] "Employees' implicit and explicit knowledge will determine an organisation's ability to solve problems or create new knowledge" (Nguyen et al., 2023, p. 1648).

[5] "Dynamic capabilities are influenced by organisational learning mechanisms, including knowledge accumulation, articulation, codification, and the learning culture" (Nguyen et al., 2023, p. 1648).

H1a The use of belief systems will be positively associated with organisational resilience.

2.3.2 Belief systems and workplace flexibility

Heinicke et al. (2016) found that belief controls were directly associated with the extent of an organisation's flexibility values, which entail spontaneity, change, openness, adaptability, and responsiveness. Specifically, belief systems promote an atmosphere of flexibility and creativity within the organisation (Simons, 2000), thereby supporting employees in engaging in opportunity-seeking behaviour and adapting to the changing business environment. Strong belief systems can facilitate the capability of organisations to respond to unexpected circumstances through devoting attention and committing resources to enhancing the maneuverability of the workforce (i.e. workplace flexibility). The communication of such intentions, together with the dedication of resources to such endeavours, will enhance the flexibility in which work related activities are undertaken, and enhance both the ability and knowledge of employees as to how to manage their work-related activities in a way which effectively responds to unexpected events as they arise i.e. higher workplace flexibility. Further, through effectively communicating the organisation's core values, belief systems can also be used to ensure that employees are equipped with sufficient knowledge to enable the effective establishment and functioning of such flexible workplace arrangements. The extensive and formal communication of organisational core values and beliefs also assists in developing strong internal values and enhancing employees' willingness to assume additional responsibilities (Baird et al., 2018), thereby facilitating the ability of organisations to implement flexible workplace arrangements.

Hence, consistent with Bitencourt et al. (2020) who found that the level of resources and knowledge were antecedents of dynamic capabilities, we expect that belief systems will enhance the workplace flexibility organisational capability, through providing sufficient resources and knowledge to facilitate the development of flexible workplace arrangements. Hence, through creating a flexible and creative climate and strong values, belief systems can establish an organisational environment which is conducive to and facilitates flexible workplace arrangements.

H1b *The use of belief systems will be positively associated with workplace flexibility.*

2.3.3 Interactive control systems and organisational resilience

The use of interactive control systems is crucial in times of crises as frequent communication between senior managers and subordinates provides relevant and more up-to-date information for rapid and optimal decision-making. Specifically, interactive controls will assist organisations in responding to unexpected events and hence, foster their organisational resilience capability through facilitating the development of and acquisition of knowledge which enables organisations and their employees to solve problems (Nguyen et al., 2023) and take actions which enhance competitive advantage (Eisenhardt & Martin, 2000).

Prior studies have highlighted the importance of two-way symmetrical communication, via frequent dialogue and debate between top management and employees (Kim, 2021), in facilitating organisational resilience. Accordingly, interactive control systems can facilitate organisational resilience through creating a climate of open communication which results in quick and effective situation-specific responses to unexpected challenges (Kuntz et al., 2017; Lengnick-Hall et al., 2011). Furthermore, through facilitating the effective discussion and communication of evolving organisational strategies and goals throughout the organisation, and proactively monitoring and anticipating the expected changes in the external environment of an organisation, the interactive use of controls is crucial in managing disturbances (Beuren et al., 2020) i.e. enhancing organisational resilience.

In addition, the use of an interactive control system "creates intrinsic motivation by creating a positive informational environment that encourages information sharing and learning" (Simons, 2000, p. 304) and promoting employee autonomy which leads to higher employee commitment to their organisation (Beuren et al., 2020). Specifically, the resulting increase in the knowledge base and commitment of organisational participants stimulates experimentation, creativity and innovation (DesJardine et al., 2019), which facilitates the emergence of new strategies to deal with unanticipated events, thereby enhancing organisational resilience.

In summary, interactive control systems promote enhanced communication and greater information sharing, thereby enhancing knowledge and developing the capability of organisations to effectively respond to unexpected events i.e. organisational resilience.

H2a *The use of interactive control systems will be positively associated with organisational resilience.*

2.3.4 Interactive control systems and workplace flexibility

Interactive control systems direct the attention of organisational participants to consider how work-related activities are best undertaken and encourage dialogue and debate regarding opportunities and threats in respect to workplace arrangements. Accordingly, such discussion is likely to enhance learning and assist organisations in being more responsive and flexible (Naranjo-Gil & Hartmann, 2006) and may even result in more resources being allocated to workplace flexibility endeavours. Similarly, Henri (2006) argues that interactive control systems foster knowledge dissemination, information distribution and communication among organisational participants at different hierarchical levels, which is conducive to the implementation of flexible work arrangements. Hence, through encouraging discussion and debate, greater coordination and inter-organisational communication, and the allocation of additional resources, interactive control systems are likely to support the implementation of flexible work arrangements.

Interactive control systems encourage discussion and interaction between managers and motivate managers to critically evaluate underlying data and challenge proposed action plans (Marginson et al., 2014). In the context of workplace flexibility, interactive controls will facilitate workplace flexibility as managers are more likely

to engage in discussions relating to the nature of work-related activities and how such activities are performed by employees. As such, it is more likely that greater consideration will be given to how workplace arrangements can better respond to changes in an organisation's external environment (Cabral & van Winden, 2022), with current work-related routines more likely to be challenged, and new routines considered and introduced. Hence, we expect that higher interactive use of controls will enhance the capability of organisations to respond to unexpected circumstances through increasing the maneuverability of the workforce (i.e. workplace flexibility).

H2b *The use of interactive control systems will be positively associated with workplace flexibility.*

2.3.5 Organisational resilience and organisational performance

Prior studies have empirically examined the association between organisational resilience and organisational performance with the majority of studies focusing on the effect on financial performance. For example, McCann et al. (2009) demonstrated that companies with higher levels of resilience exhibit a higher level of profitability and competitiveness, even when experiencing higher levels of environmental turbulence. Similarly, Prayag et al. (2018) found a significant positive association between organisational resilience and financial performance.

Mitroff (2005) contends that resilient organisations engage in effective crisis management during both good times and bad times, and therefore encounter fewer crises and achieve higher profitability. Similarly, McCann et al. (2009) argue that the resilience capability helps organisations to avoid or minimise the adverse consequences of environmental turbulence and hence, minimise its negative effect on profitability. In particular, organisations with a higher level of resilience perceive disruptions to be less threatening (Maddi & Khoshaba, 2005) and function more effectively during a crisis as they have proactive processes to reinforce and promote organisational health (Shani, 2020).

The organisational resilience capability allows organisations to diagnose changing environmental conditions more accurately and select the most effective strategies to deal with disruptions (Lengnick-Hall et al., 2011). Organisational resilience also enhances the ability of organisations to rapidly process feedback and rearrange or transfer knowledge and resources during unanticipated events, thereby improving organisational effectiveness (Sutcliffe, 2003). Furthermore, the resilience capability supports organisations in acquiring and retaining the critical resources required for growth and enhances their ability to transform operations to cope with disturbances (Lengnick-Hall et al., 2011), thereby prospering amid threatening disruptions or crises (Rodríguez-Sánchez et al., 2021). Hence, as organisational resilience results in more effective responses to environmental disturbances, we hypothesise a positive association between organisational resilience and organisational performance.

H3 *Organisational resilience will be positively associated with organisational performance.*

2.3.6 Workplace flexibility and organisational performance

The benefits of workplace flexibility have been widely advocated by practitioners and academics. For example, at the organisational level, it has been demonstrated that flexible work arrangements, specifically telecommuting, reduce real estate costs (Gajendran & Harrison, 2007), thereby decreasing the operating expenses for organisations and hence, increasing profitability. Further, at the individual level, there is evidence that workplace flexibility practices have a positive impact on employee's health, morale, work-life balance and productivity (Casey & Grzywacz, 2008; Gajendran & Harrison, 2007), which is also expected to have a positive impact on organisational performance.

Through allowing employees to determine their working location and the scheduling of their work, workplace flexibility also enhances employees' job autonomy, which in turn exhibits a positive influence on organisational performance. For example, Gajendran and Harrison (2007) reported a positive relationship between telecommuting (i.e. employees working at a location other than the official place of work for at least some portion of their work schedule) and employees' perceived autonomy. In turn, job autonomy has been found to be positively associated with employee motivation, satisfaction, commitment, well-being and individual performance, all of which contribute to the enhancement of employee productivity and organisational performance. At the same time, job autonomy has been found to be negatively associated with stress, work-family conflict, absenteeism and employee turnover (Dhondt et al., 2014; Humphrey et al., 2007; Michel et al., 2011; Preenen et al., 2017), all of which can have a detrimental effect on organisational performance.

In addition, Preenen et al. (2017) argue that internal labour flexibility (which includes flexible working schedules) stimulates creative and innovative behaviour. In particular, the enhanced autonomy and control of employees over their work arrangements will provide them with better opportunities to experiment and develop new ideas and anticipate and adapt to changing circumstances. Such job autonomy has been reported to be positively associated with innovative behaviour and problem solving skills (Bindl & Parker, 2011; Hammond et al., 2011), which are beneficial to organisational performance.

Further, organisations that provide flexible work arrangements have a competitive edge in attracting the best talent and retaining their employees (Gajendran & Harrison, 2007; Vega, 2003). Finally, as organisations demonstrate their commitment and support for employees' well-being, through greater work autonomy and better work-life balance (Preenen et al., 2017), this gesture is expected to be reciprocated with a higher level of employee psychological commitment towards their organisation and higher dedication to their job tasks and achievement of organisational goals, thereby resulting in higher organisational performance.

While there are also some potential negative effects associated with workplace flexibility, for example work intensification for employees, employee dysfunctional behaviour, and a negative impact on quality or the ability to achieve organisational goals (Bal & Izak, 2021), as the majority of the literature advocates the

positive impact of workplace flexibility, we hypothesise a positive association between workplace flexibility and organisational performance.

H4 *Workplace flexibility will be positively associated with organisational performance.*

3 Method and data analysis

3.1 Sample description

The data used to examine the hypotheses were collected using an online survey questionnaire managed by a data collection company, Qualtrics. Specifically, an online survey questionnaire was distributed to the lower-level, middle-level and senior-level managers[6] of 1000 Australian organisations with a total of 783 responses received. However, the responses of 267 of these were incomplete either because they did not provide consent to participate in the survey (25 respondents), indicated that they were not a manager (76 respondents) or because they worked in organisations that did not fulfil the criteria of having a minimum of 100 employees (166 respondents). Further, due to issues in regard to the way in which respondents completed the questionnaire (e.g., speeders), a further 179 respondents were excluded leaving 337 responses that were used in the data analysis (a response rate of 33.7%). The final sample included 51 senior-level managers (15.1% of sample), 168 middle-level managers (49.9%) and 118 lower-level managers (35%)[7] from organisations operating across various industries (see Table 1). A comparison of the mean scores of the independent and dependent variable values revealed no significant difference between early and late respondents, and hence in line with Roberts (1999) non-response bias was not considered to be a problem.

In line with Jordan and Troth (2020), we provided clear guidelines regarding how to complete the questionnaire, only used two anchor points on 5-point Likert scales to make it easier to provide responses, and applied attention and speeder checks to ensure the reliability of the data collected. Further, Harman's (1976) test revealed that the highest total variance explained by a single factor was 26.41% which is well below the 50% threshold. In addition, the result of the Common Latent Factor (CLF) test revealed that the calculated common variance (26%) is well below the threshold of 50% (Eichhorn, 2014), suggesting that common method bias was not an issue (Podsakoff et al., 2003).

[6] Senior-level managers are responsible for the entire organisation (e.g. CEO, CFO); middle-level managers are at the centre of a hierarchical organisation, subordinates to senior managers but above the lowest level of operational staff; lower-level managers are the first line of managers who communicate the fundamental operating problems to higher levels of management.

[7] While we do not have information on all of the respondents excluded from the analysis, the proportions of managers excluded due to working in organisations with less than 100 employees was similar, specifically 17.1% were senior-level managers, 52.4% were middle-level managers and 30.5% were lower-level managers.

Table 1 Respondents by industry

Industry	N	%
A—Agriculture, Forestry and Fishing	3	0.9
B—Mining	3	0.9
C—Manufacturing	24	7.1
D—Electricity, Gas, Water and Waste Services	5	1.5
E—Construction	7	2.1
F—Wholesale Trade	8	2.4
G—Retail Trade	24	7.1
H—Accommodation and Food Services	6	1.8
I—Transport, Postal and Warehousing	14	4.2
J—Information Media and Telecommunications	36	10.7
K—Financial and Insurance Services	53	15.7
L—Rental, Hiring and Real Estate Services	3	0.9
M—Professional, Scientific and Technical Services	31	9.2
N—Administrative and Support Services	7	2.1
O—Public Administration and Safety	23	6.8
P—Information, media and telecommunications)	26	7.7
Q—Health Care and Social Assistance	30	8.9
R—Arts and Recreation Services	7	2.1
S—Other Services	27	8
Total	**337**	**100**

3.2 Variable measurement

All variables were measured using a five-point Likert scale. Confirmatory factor analysis (CFA) was performed to confirm the reliability and dimensionality of all of the constructs, with the results reported in the Appendix. The use of belief systems and interactive control systems were measured using the adapted versions of Widener's (2007) four-item measure and Su et al.'s (2015) five-item instrument respectively. Organisational resilience was measured using Kantur and Iseri-Say's (2015) nine-item measure. Workplace flexibility was measured using a five-item self-developed measure based on the Australian Government's (2020) classification of the types of workplace flexibility, with the CFA resulting in one item being removed due to a low loading. Finally, organisational performance was assessed using Kaynak and Kara's (2004) six-item scale which encompasses both non-financial and financial performance, with two items being removed due to low loadings. All of the remaining items in each scale exhibited a good model fit (see Appendix).

The Appendix also presents the descriptive statistics for each construct and indicate that there was a moderate-to-high level of organisational resilience (mean = 3.812). This mean score is less than that reported by Kantur and Iseri-Say (2015) in their study which identified three dimensions of resilience [mean of 4

Table 2 Cronbach's alpha, composite reliability and average variance extracted scores

	Cronbach's alpha scores	Composite reliability	AVE
Belief systems	0.848	0.918	0.583
Interactive control systems	0.864	0.980	0.560
Organisational resilience	0.920	0.985	0.558
Workplace flexibility	0.829	0.968	0.551
Organisational performance	0.844	0.978	0.593

Table 3 Correlations and square root of AVE scores

	1	2	3	4	5
1. Belief systems	**0.76**				
2. Interactive control systems	0.77	**0.75**			
3. Organisational resilience	0.51	0.53	**0.75**		
4. Workplace flexibility	0.38	0.36	0.34	**0.74**	
5. Organisational performance	0.50	0.52	0.44	0.34	**0.77**

NB the diagonal figures in bold are the square roots of the AVE scores

for agility and 4.3 for robustness and integrity],[8] although notably their study surveyed long running family businesses and hence, they were expected to be more resilient. The level of the positive systems was moderate (mean scores for belief systems = 3.460 and interactive control systems = 3.508) and similar to previous studies, e.g. Baird et al. (2019) reported a mean score of 3.561 for belief systems, while Su et al. (2015) reported a mean score of 3.310 for interactive control systems. The level of organisational performance was also moderate (mean = 3.464) although as expected it was lower than that reported in previous studies conducted prior to COVID-19 (3.832 in Su et al. (2015); 3.683 in Baird et al. (2019)). Finally, the mean score for workplace flexibility was lower (3.008) and as this was a new measure no comparisons can be made.

Table 2 shows that acceptable Cronbach's (1951) alpha (i.e. > 0.7) (Nunnally, 1978), composite reliability (i.e. > 0.7) (Werts et al., 1974) and AVE (i.e. > 0.50) (Chin, 1998) scores were reported, thereby supporting the reliability and convergent validity (Hair et al., 2014) of all of the constructs.

Table 3 reports the correlation scores between the constructs. Table 3 shows that there is a strong correlation between the two positive systems, belief systems and interactive control systems. The correlation here is expected as they are both types of control systems and we account for this significant covariance ($\beta = 0.409$; $p = 0.000$) in the structural model. However, in respect to the other relationships, the

[8] While this study focused on three dimensions of organisational resilience, the current study found that Kantur and Iseri-Say's (2015) nine items loaded on one dimension.

square root of the AVE scores of each construct are higher than the correlations with other constructs and therefore discriminant validity is assured (Chin, 1998).

As larger organisations have more resources and a greater capability to manage decision-making and operational processes effectively, organisational size has the ability to influence organisational resilience, workplace flexibility and organisational performance (Prayag et al., 2018). Therefore, organisational size, measured based on the logarithm of the number of employees in each organisation (Becker-Blease et al., 2010), was included as a control variable. A second control variable, industry, was also included with a series of dummy variables created to represent each industry (1 if in a specific industry and 0 if not). A series of models were run for each of the nine industries with more than 20 respondents (see Table 1).

4 Results

Structural equation modelling (SEM) was used to examine the hypotheses regarding the associations between the two positive systems (belief systems and interactive control systems) and the two organisational capabilities (organisational resilience and workplace flexibility), and the subsequent associations between these two organisational capabilities with organisational performance. In addition, we included paths to recognise the potential direct effect of belief systems and interactive control systems on organisational performance. Finally, given flexibility may provide the opportunity to act in response to new circumstances, which should help to improve resilience (Bhamra et al., 2011), we also added a path between workplace flexibility and organisational resilience.

Table 4 Panel A provides the initial results. However, while the hypothesised relationships were all significant, the goodness of fit scores could not be calculated in respect to the CMIN/DF and AGFI measures while the RMSEA score (0.300) was poor. This poor fit can be attributed to the insignificant associations in respect to the control variables, specifically organisational size with organisational resilience ($\beta = 0.027$; $p = 0.146$) and workplace flexibility ($\beta = 0.007$; $p = 0.812$) and industry with organisational resilience ($\beta = 0.009$; $p = 0.918$), workplace flexibility ($\beta = 0.218$; $p = 0.146$) and organisational performance ($\beta = -0.058$; $p = 0.506$). In respect to industry, the results here are based on the financial and insurance services industry which was chosen as it had the most respondents (53). The model was retested for each of the other 8 industries with at least 20 respondents and identical associations were found in respect to the hypothesised relationships, with the exception being that there was a significantly higher (lower) level of workplace flexibility in the information media and telecommunications, and public administration and safety (health care and social assistance, and retail trade) industries and higher (lower) organisational performance for those in the retail trade (education and training) industries.

Table 4 Results of the structural model

Regression path	PANEL A				PANEL B			
	Std. Beta	S.E	C.R	*P*-value	Std. Beta	S.E	C.R	*P*-value
(H1a) Belief systems → Organisational resilience	0.207	0.070	2.967	0.003	0.208	0.070	2.978	0.003
(H1b) Belief systems → Workplace flexibility	0.365	0.113	3.221	0.001	0.373	0.114	3.284	0.001
(H2a) Interactive control systems → Organisational resilience	0.317	0.071	4.486	0.000	0.313	0.071	4.430	0.000
(H2b) Interactive control systems → Workplace flexibility	0.225	0.116	1.945	0.052	0.233	0.116	2.005	0.045
(H3) Organisational resilience → Organisational performance	0.165	0.052	3.161	0.002	0.165	0.052	3.165	0.002
(H4) Workplace flexibility → Organisational performance	0.083	0.032	2.598	0.009	0.082	0.032	2.552	0.011
Belief systems → Organisational performance	0.154	0.068	2.271	0.023	0.152	0.068	2.252	0.024
Interactive control systems → Organisational performance	0.255	0.070	3.667	0.000	0.253	0.070	3.643	0.000
Workplace flexibility → Organisational resilience	0.098	0.033	2.970	0.003	0.100	0.033	3.019	0.003
Organisational size → Organisational performance	0.038	0.018	2.061	0.039	0.036	0.018	1.981	0.048
Organisational size → Organisational resilience	0.027	0.019	1.445	0.146	Not significant			
Organisational size → Workplace flexibility	0.007	0.031	0.237	0.812	Not significant			
Industry* (Financial and insurance services) → Organisational performance	− 0.058	0.087	− 0.666	0.506	Not significant			
Industry* (Financial and insurance services) → Organisational resilience	0.009	0.091	0.102	0.918	Not significant			
Industry* (Financial and insurance services) → Workplace flexibility	0.218	0.149	1.455	0.146	Not significant			
Goodness of fit statistics								
CMIN/DF	Not determined				1.003			
GFI	1.000				0.996			
AGFI	Not determined				0.976			
CFI	1.000				1.000			
RMSEA	0.300				0.003			

*Based on the financial and insurance services industry

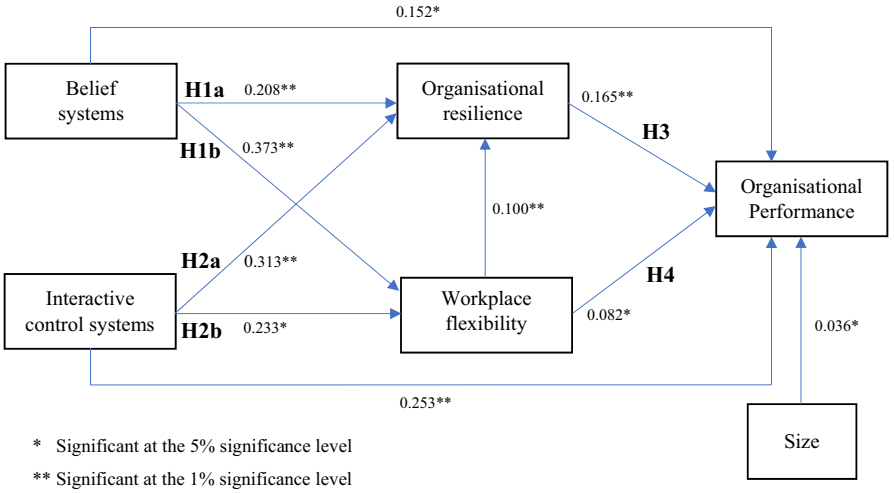

Fig. 2 Results of the structural equation model. * Significant at the 5% significance level. ** Significant at the 1% significance level

In line with Anderson and Gerbing (1988) the non-significant paths were removed one by one until all of the remaining paths were statistically significant.[9] Figure 2 and Table 4 Panel B provide the results of the final model with good model fit indices shown in Table 4 (CMIN/DF = 1.003; GFI = 0.996; AGFI = 0.976; CFI = 1.000; RMSEA = 0.003).[10]

The final model (Panel B) shows that both of the positive systems (belief systems and interactive control systems) were significantly positively associated with the two organisational capabilities, namely, organisational resilience [belief systems (β = 0.208; p = 0.003); interactive control systems (β = 0.313; p = 0.000)] and workplace flexibility [belief systems (β = 0.373; p = 0.001); interactive control systems (β = 0.233; p = 0.045)], thereby providing support for H1a, H1b, H2a, and H2b. In addition, belief systems (β = 0.152; p = 0.024) and interactive control systems (β = 0.253; p = 0.000) were found to exhibit a direct significant positive association with organisational performance.

In respect to the effect of the organisational capabilities, organisational resilience was found to be significantly positively associated with organisational performance (β = 0.165; p = 0.002), thus providing support for H3. Similarly, workplace flexibility was found to be significantly positively associated with organisational performance (β = 0.082; p = 0.011), thereby providing support for H4. Workplace flexibility was also found to be significantly positively associated with organisational resilience

[9] While industry (based on the financial and insurance services industry) was incorporated in the initial SEM model (see Table 4 Panel A), it is not reported in the final model (see Table 4 Panel B) as it was insignificantly associated with all of the other variables.

[10] A good fit is indicated by a CMIN/DF < 5; GFI, AGFI, CFI > 0.8; RMSEA < 0.05 (Hair et al., 2010).

Table 5 The mediating effect of organisational resilience and workplace flexibility in the association between positive systems with performance

	Belief systems to organisational performance			Interactive control systems to organisational performance		
	LL 95% CI	UL 95% CI	*P*-value	LL 95% CI	UL 95% CI	*P*-value
MEDIATOR						
Organisational resilience	0.018	0.091	0.007	0.019	0.116	0.011
Workplace flexibility	0.014	0.660	0.009	0.006	0.055	0.019

(β = 0.100; $p = 0.003$), while the control variable organisational size was significantly positively associated with organisational performance (β = 0.036; $p = 0.048$).

Based on the observed relationships between the two positive systems with the two organisational capabilities (organisational resilience and workplace flexibility) and the subsequent effect of these two capabilities on organisational performance, we examined the mediating role of the two organisational capabilities on the association between the two positive systems and organisational performance. Specifically, the bootstrapping with bias-corrected percentile method[11] (Cheung & Lau, 2008; Taylor et al., 2008) was applied with the results presented in Table 5.

Table 5 shows that organisational resilience mediates the positive association between both of the two positive systems with organisational performance [belief systems (CI_{LL} 0.018, CI_{UL} 0.091, $p = 0.007$) and interactive control systems (CI_{LL} 0.019, CI_{UL} 0.116, $p = 0.011$)], as the confidence intervals (CIs) do not cross zero and the associations are significant. Further, Table 5 shows that workplace flexibility also mediates the positive association between both of the two positive systems with organisational performance [belief systems (CI_{LL} 0.014, CI_{UL} 0.660, $p = 0.009$) and interactive control systems (CI_{LL} 0.006, CI_{UL} 0.055, $p = 0.019$)]. As Table 4 Panel B indicates that belief systems and interactive control systems exhibit a direct significant positive association with organisational performance, we conclude that organisational resilience and workplace flexibility partially mediate these associations.

Additional analysis was conducted to test the model for each of the three types of managers i.e. senior, middle, and lower-level managers. In respect to the senior and lower-level managers, workplace flexibility was found to mediate the association between belief systems and organisational performance. However, organisational resilience was not found to mediate the relationship between positive systems and organisational performance. This can possibly be attributed to the lower sample size here with only 118 lower-level and 51 senior-level managers available and SEM requiring a sample size of 200 (Kline, 2011). Alternatively, in respect to middle-level managers, where there was a larger sample size (168), the results were similar

[11] The bias-corrected percentile method adjusts for bias in the bootstrap distribution to improve confidence intervals (Cheung & Lau, 2008).

to the overall findings with organisational resilience found to mediate the effect of belief systems (through workplace flexibility) and interactive control systems on organisational performance.

5 Discussion and conclusion

This study aimed to provide an empirical insight into the antecedents and consequences of two organisational capabilities, organisational resilience and workplace flexibility, given these capabilities are essential for organisations to withstand and navigate through external disturbances. In particular, utilising the dynamic capability theory, we examined how Simons' (1995) positive systems (belief systems and interactive control systems) influenced two organisational capabilities (organisational resilience and workplace flexibility) in a way which enhanced organisational performance. Specifically, we examined the influence of the positive systems (belief systems and interactive control systems) on the deployment of organisational resilience and workplace flexibility, and in turn the effect of these capabilities on organisational performance. The model was tested using structural equation modelling with data collected from 337 lower-level, middle-level, and senior-level managers in Australian business organisations during the COVID-19 pandemic. Our findings indicate that the use of both belief systems and interactive control systems are positively associated with the level of organisational resilience and workplace flexibility, which in turn, exhibit a significant positive effect on organisational performance. In addition, organisational resilience and workplace flexibility are found to partially mediate the associations between the positive systems and organisational performance.

The results further reveal that the use of belief systems exhibit a stronger effect on workplace flexibility, while the use of interactive control systems exhibit a stronger effect on organisational resilience. In addition, the direct effects of belief systems on organisational performance appear to be stronger than the indirect effects exhibited through organisational resilience and workplace flexibility, while the direct effects of interactive control systems on organisational performance are stronger than the indirect effects exhibited through the two capabilities. The findings here in respect to the association between the interactive use of controls and organisational performance support the theoretical assertions regarding the benefits of such controls and contribute to the limited empirical findings examining this association (see Su et al., 2015). Further, while previous studies have only reported a positive association between the interactive use of controls and performance in certain contextual circumstances, for example when task uncertainty was high (Sakka et al., 2013) or only for growth stage firms (Su et al., 2015), the strong significant positive association reported here highlights the importance of the interactive use of controls in enhancing organisational performance.

The study makes several contributions to the literature and practice. First, the study contributes to the literature investigating the association between MCSs and organisational capabilities (e.g. Henri, 2006; Nuhu et al., 2019). In particular, while prior studies utilising Simons' (1995) levers of control framework have mainly

focused on the interactive and diagnostic use of controls, our study highlights the important roles of positive systems (belief systems and interactive control systems) in enhancing organisational resilience and workplace flexibility.

Secondly, the study further contributes to the organisational capability literature by highlighting the significant positive associations between the two organisational capabilities, organisational resilience and workplace flexibility, with organisational performance. Such findings are consistent with previous studies which have found a positive association between organisational resilience and performance (Prayag et al., 2018; Rodríguez-Sánchez et al., 2021; Zhou et al., 2022), and between workplace flexibility and performance (Martínez Sánchez et al., 2007; Preenen et al., 2017).

Thirdly, the findings contribute to the MCS literature by providing empirical evidence regarding a mechanism through which Simons' (1995) positive systems influence organisational performance. Specifically, our results indicate that the two types of organisational capabilities, organisational resilience and workplace flexibility, play a significant role in mediating the association between the use of positive systems (belief systems and interactive control systems) with organisational performance. Such findings are consistent with the suggestion that the impact of MCSs on organisational performance transpires at the capabilities level (Henri, 2006).

Given these findings, it is suggested that organisations place greater emphasis on positive control systems. In particular, managers should place greater emphasis on the use of belief systems, i.e., formally and extensively communicating the organisation's vision, beliefs and core values to employees across different levels. Further, managers should endeavour to use controls more interactively, engaging in frequent discussions and communication with lower-level managers and employees in the decision-making process. In addition, as both positive systems involve the sharing of information and the development of organisational capabilities occurs via organisational learning (Leiringer & Zhang, 2021), managers should encourage the sharing of information, continual learning, and opportunity-seeking behaviour within organisations.

In addition, managers should proactively seek to develop and enhance their level of organisational resilience and workplace flexibility as a means of improving the performance of their organisation. This may entail conscious decisions by managers to enhance workplace flexibility and/or implement procedures and/or processes designed to enhance their organisational resilience. Further, as the effect of the positive systems on organisational performance transpires through these two organisational capabilities, this reinforces and further highlights the importance of enhancing the emphasis on positive systems.

As with other empirical studies, this study is subject to several limitations. For example, it is not possible to establish empirical evidence for causality since the analysis was based on cross-sectional data collected through a survey. Further, as there could be a lag between the implementation of the positive systems, the development of organisational capabilities, and the improvement in performance, future studies could utilise longitudinal data to analyse the hypothesised relationships. Given that the study highlights the importance of organisational resilience and workplace flexibility in enhancing organisational performance, future studies

may also examine other factors that may facilitate the development of such capabilities. Finally, future research may consider the potential for other organisational capabilities to mediate the association between MCSs and performance.

Appendix A: Measurement of variables and confirmatory factor analysis (CFA)

Belief systems

To what extent has your organisation's focus on each of the following changed during COVID-19 (1 = Significantly less emphasis, 5 = Significantly greater emphasis).

Items	Loadings	Standardised error	P-value
Our mission statement inspires our workforce	0.773	–	–
Our mission statement clearly communicates the organisation's core values to our workforce	0.680	0.066	0.000
Our company's top level managers communicate core values to our workforce	0.784	0.700	0.000
Our employees are well aware of the organisation's core values	0.816	0.072	0.000
Goodness of fit statistics			
CMIN/DF	2.709		
GFI	0.992		
AGFI	0.961		
CFI	0.994		
RMSEA	0.071		

Interactive control systems

To what extent has your organisation's focus on each of the following changed during COVID-19: (1 = Significantly less emphasis, 5 = Significantly greater emphasis):

Items	Loadings	Standardised error	P-value
Controls generate information that forms an important and recurring agenda in discussions between operational and senior managers	0.787	–	–
There is an on-going interaction between operational management and senior managers	0.647	0.074	0.000
Controls are used regularly in scheduled face-to-face meetings between operational and senior managers	0.752	0.075	0.000

Items	Loadings	Standardised error	P-value
Controls are used to discuss changes that are occurring within the business unit	0.763	0.071	0.000
Controls are used as a means of developing ongoing action plans	0.792	0.071	0.000
Goodness of fit statistics			
CMIN/DF	2.217		
GFI	0.987		
AGFI	0.960		
CFI	0.992		
RMSEA	0.060		

Organisational resilience

Please indicate the extent to which you agree with the following statements regarding your organisation (1 = Strongly disagree, 5 = Strongly agree).

Items	Loadings	Standardised error	*P*-value
Does not give up and continues its path	0.725	–	–
Stands straight and is strong enough to preserve its position	0.698	0.082	0.000
Is successful in generating diverse solutions	0.796	0.083	0.000
Rapidly takes action	0.755	0.096	0.000
Develops alternatives in order to benefit from negative circumstances	0.741	0.082	0.000
Is agile in taking required action when needed	0.805	0.088	0.000
Is a place where all the employees are engaged to do what is required of them	0.691	0.087	0.000
Is successful in acting in a unified manner with all of its employees	0.738	0.094	0.000
Responds effectively to disruptive events	0.776	0.085	0.000
Goodness of fit statistics			
CMIN/DF	0.907		
GFI	0.985		
AGFI	0.973		
CFI	1.000		
RMSEA	0.000		

Workplace flexibility

Please indicate the extent to which each of the following work arrangements existed in your organisation work during COVID-19 (i.e. during 2020): (1 = Strongly disagree, 5 = Strongly agree):

Items	Loadings	Standardised error	*P*-value
Purchased leave[a]	0.670	–	–
Flexible hours of work[b]	0.681	0.090	0.000
Compressed working weeks[c]	0.821	0.102	0.000
Time in lieu[d]	0.796	0.101	0.000
Goodness of fit statistics			
CMIN/DF	1.540		
GFI	0.995		
AGFI	0.977		
CFI	0.998		
RMSEA	0.040		

NB The item 'Telecommunicating' (i.e., working at a location other than the official place of work) was removed due to low loadings

[a]A period of leave without pay

[b]Start and finish times can be varied

[c]The same total number of weekly (or fortnightly or monthly) hours are compressed into a shorter period

[d]To compensate for approved overtime

Organisational performance

While it is acknowledged that COVID-19 has impacted the performance of organisations during 2020 please rate the performance of your organisation during 2020 (compared to other organisations operating in the same industry) in respect to each of the following: (1 = Worse than competitors, 5 = Better than competitors).

Items	Loadings	Standardised error	*P*-value
Profit levels	0.824	–	–
Sales levels	0.780	0.067	0.000
Return on investment	0.775	0.070	0.000
Customer retention rate	0.702	0.077	0.000
Goodness of fit statistics			
CMIN/DF	0.467		
GFI	0.999		
AGFI	0.993		
CFI	1.000		
RMSEA	0.000		

NB Two items ('product quality' and 'employee turnover rate') were removed due to low loadings.

Appendix B: Descriptive statistics of the variables

	N	Mean	S.D.	Minimum Actual (Theoretical)	Maximum Actual (Theoretical)
Organisational size	337	6354.180	16,867.563	100 (100)	156,000 (NA)
Belief systems	337	3.460	0.737	1.000 (1)	5.000 (5)
Interactive control systems	337	3.508	0.721	1.000 (1)	5.000 (5)
Organisational resilience	337	3.812	0.720	1.000 (1)	5.000 (5)
Workplace flexibility	337	3.008	1.063	1.000 (1)	5.000 (5)
Organisational performance	337	3.464	0.696	1.000 (1)	5.000 (5)

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Data availability The data that support the findings of this study are available from the corresponding author upon request.

Declarations

Conflict of interest All authors certify that they have no affiliations with or involvement in any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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