Routledge
Taylor & Francis Group

Innovation
Organization & Management

ISSN: 1447-9338 (Print) 2204-0226 (Online) Journal homepage: https://www.tandfonline.com/loi/rimp20

Organisational improvisation as a path to new opportunity identification for incumbent firms: an organisational learning view

Qian Xiang, Jianqi Zhang & Heng Liu

To cite this article: Qian Xiang, Jianqi Zhang & Heng Liu (2020): Organisational improvisation as a path to new opportunity identification for incumbent firms: an organisational learning view, Innovation, DOI: 10.1080/14479338.2020.1713001

To link to this article: https://doi.org/10.1080/14479338.2020.1713001

Published online: 22 Jan 2020.

INNOVATION
https://doi.org/10.1080/14479338.2020.1713001

Routledge
Taylor & Francis Group

ARTICLE

Organisational improvisation as a path to new opportunity identification for incumbent firms: an organisational learning view

Qian Xiang, Jianqi Zhang and Heng Liu

Lingnan College, Sun Yat-sen University, Guangzhou, China

ABSTRACT

Many recent studies on entrepreneurial opportunity view opportunity identification as a collective process and call for further research on incumbent firms. In this article, we respond to this call and reveal a positive relationship between a specific organisational learning activity (i.e., organisational improvisation) and incumbent firms' opportunity identification. Our empirical analysis of survey data for 282 Chinese firms partly supports our argument that there is a positive relationship between organisational improvisation and opportunity identification, and this relationship is weaker when the firm is under strong formal control and has a culture of being less tolerant for failure. This study contributes to the literature on opportunity and corporate entrepreneurship with an in-depth investigation of how improvisational learning leads to incumbent firms' opportunity identification. It also provides implications for organisational improvisation theory by demonstrating that improvisation, as a specific learning activity, facilitates subsequent entrepreneurial activities under certain contextual conditions.

ARTICLE HISTORY
Received 15 February 2019
Accepted 28 December 2019

KEYWORDS
Organisational improvisation; organisational learning; corporate entrepreneurship; opportunity identification

1. Introduction

Opportunity identification, the beginning of entrepreneurial initiatives, is considered a critical factor that leads to incumbent firms' strategic renewal and various value-added outcomes (Bloodgood, Hornsby, Burkemper, & Sarooghi, 2015; Ireland, Covin, & Kuratko, 2009; Urban & Wood, 2015). While it is well acknowledged that incumbent firms provide a useful context for entrepreneurial opportunity identification (Shane & Venkataraman, 2000), the literature builds mainly on studies of start-ups and nascent firms where information advantages owned by individuals dominate the attention (Arenius & De Clercq, 2005; Shane, 2000; Vandor & Franke, 2016). An organisational perspective that emphasises collective and coordinated actions of opportunity identification among organisational members within incumbent firms has only recently been proposed (e.g., Barney, Foss, & Lyngsie, 2018; Foss & Lyngsie, 2014) and has received a limited understanding.

Compared to the opportunity discovery view, which holds that objective opportunity emerges through individuals' alertness to it (Kirzner, 1979), the constructivist view that underlines the engagement of multiple stakeholders collectively cultivating or creating

CONTACT Jianqi Zhang lnszjq@mail.sysu.edu.cn

opportunity in meaning and content (Dimov, 2011; Lumpkin, 2005; Snihur, Reiche, & Quintane, 2017; Turner & Pennington, 2015) may be a better fit for the incumbent firm context because the identification of feasible and desirable opportunities in an incumbent firm usually entails participation from the bottom to the top (Barney et al., 2018). Among the research adopting a constructivist view, organisational learning as a constructive process embodying systematic changes in behavioural and cognitive models within organisations is suggested to add to new knowledge for potential opportunity identification (Dutta & Crossan, 2005; Luksha, 2008). Specifically, because organisational learning is a process that concentrates on transforming individuals' actions into organisational outcomes (Sinkula, Baker, & Noordewier, 1997), it reflects the interactive and social features of opportunity identification, which allows a more in-depth exploration of collective interactions rather than just individual characteristics, which have been the current focus (Short, Ketchen, Shook, & Ireland, 2010). It is thus reasonable to adopt this learning perspective to explain opportunity identification within incumbent firms, which is still a notable research gap in the existing literature (Dimov, 2007b; Dutta & Crossan, 2005; Turner & Pennington, 2015).

To address this issue, this study attempts to examine how a specific organisational learning activity could be related to opportunity identification by incumbent firms by highlighting *improvisational learning* (hereafter, improvisation), fast and real-time learning with the convergence of the composition and execution of the action. In fact, a few studies demonstrate the positive effect that improvisation has on the entrepreneurial process (e.g., Best & Gooderham, 2015; Hmieleski & Corbett, 2006). Nevertheless, most of these studies regard improvisation as a provisional tactic to solve emerging problems confronting entrepreneurs. Few recognise that improvisation may also generate innovative entrepreneurial outcomes by creating a unique learning effect (Hmieleski, Corbett, & Baron, 2013).

Integrating the literature on entrepreneurial opportunity, improvisation, and organisational learning, we argue that organisational improvisation could add to the opportunities identified by incumbent firms by encouraging intuitive learning, the integration of individual thoughts into collective knowledge, and the use of this emerging knowledge to build new means-ends connections (Crossan, 1998; Miner, Bassoff, & Moorman, 2001). Moreover, to evaluate the varying learning effects of organisational improvisation on opportunity identification in different contexts, we identify two moderators in the model: the organisational level of formal control and tolerance for failure to reflect the possible contingent influence, given that the organisation's formal structure and informal culture are two main contextual factors influencing the effectiveness of organisational learning (Chadwick & Raver, 2015; Fiol & Lyles, 1985).

The present study makes some key contributions. First, with the constructivist view on opportunity identification, our study adds insights on the rarely investigated antecedent of entrepreneurial opportunity in incumbent firms. We find that improvisation, as a specific organisational learning activity, facilitates opportunity identification by incumbent firms. This finding echoes those of recent works that call for further explorations of opportunity identification beyond an individual-centric perspective (Foss & Lyngsie, 2014). We also explore the organisational contextual factors affecting the extent of improvisational learning's influence on opportunity identification. In particular, we provide empirical evidence that formal control negatively influences the relationship between improvisation and opportunity identification by incumbent firms. These results

enrich our understanding of how incumbent firms can identify opportunities through the novel form of improvisation under certain organisational conditions. Second, we complement organisational improvisation theory by conceptually interpreting it as a specific learning activity that involves intuition generation, interpretation, and knowledge integration at both the individual and collective levels. Entrepreneurial opportunities emerge along with this particular learning behaviour. Associating these improvisational features with aspects of organisational learning will deepen the knowledge of organisational improvisation and extend its potential to be operationalised in a larger field of organisation studies (Bergh & Lim, 2008).

The remainder of this article is structured as follows: we begin with a literature review, which leads to our hypotheses. We then describe the methodology used in this study and present our results. Finally, a discussion of the study's findings and implications concludes the paper.

2. Literature review and theoretical background

2.1. Opportunity identification in the context of incumbent firms

Entrepreneurial opportunity is the inception of new ventures and sources of innovation in an organisation (Venkataraman, 1997). It is classically defined as a situation in which new goods, services, raw materials, and organising methods can be introduced and sold at a greater price than their cost of production (Casson, 1982). With the potential to gain profits, the pursuit of new opportunities has been taken as the core expression of corporate entrepreneurship (CE) (Bloodgood et al., 2015).

While a stream of literature defines CE as an entrepreneurial process of pursuing new opportunities and reallocating organisational resources to exploit emerging opportunities (Ireland et al., 2009; Stevenson & Jarillo, 1990), most of the work on CE follows the research paradigm of innovation management to focus on the external environment and firm-level impacts on opportunities for product and process innovation (Foss & Lyngsie, 2014; Guth & Ginsberg, 1990). As a result, despite the fact that a few studies attend to *entrepreneurial* opportunity identification, the understanding is still incomplete. These studies are constrained mostly to the entrepreneurial orientation of leaders or a supportive environment for CE initiatives that creates opportunity (Barney et al., 2018; Turner & Pennington, 2015; Urban & Eric, 2015). The examination of the participation of other organisation members has been overlooked. Internalising opportunity identification as a critical part of CE, Bloodgood et al.'s (2015) framework proposed that opportunity undergoes several stages, including primary insights, sufficient opportunities, and legitimate opportunities, which eventually result in strategic outcomes and entrepreneurial renewal, demonstrating the involvement of both individual insights and collective thinking (Lanza & Passarelli, 2014). However, this is conceptually established without a detailed investigation on which ideas are more likely to be generated and efficiently transformed into acknowledged opportunities.

Despite the limited knowledge we could gain from the CE literature to investigate opportunity identification in incumbent firms, the literature on entrepreneurial opportunity might be more constructive to shed light on this issue as it is a phenomenon in the intersection of two fields. To fit the context of incumbent firms, this study leans on the

constructivist view of opportunity theory because it emphasises the social interactions that foster opportunity.

The constructivist view emerges as an ontologically different view compared to the objective view that predominates entrepreneurial opportunity theory. The last decade witnessed a fierce debate about whether opportunity is discovered or constructed, centring on which kind of influence – individual characteristics or social interactions – should be determinants of opportunity identification (e.g., Alvarez & Barney, 2007; Alvarez, Barney, & Anderson, 2013; Zahra, 2008). From an objective view, opportunities are discovered by entrepreneurs who possess specific information or cognitive differences to discern objective competitive imperfection in markets (Baron, 1998; Shane & Venkataraman, 2000). Ubiquitous information asymmetry is the source of objective opportunity and the main reason why people with prior knowledge are more likely to discover opportunities in specific domains than others (Shane, 2000). In addition to information advantages, researchers also hold the view that entrepreneurs' heterogeneous personal traits, such as self-efficacy, optimism (Hmieleski, Carr, & Baron, 2015), and creativity (Hills, Lumpkin, & Singh, 1997), largely affect their ability to discern objective opportunities. In contrast, from a constructionist view, opportunities can be created by the collective and constructive actions of entrepreneurs and other community members exploring ways to provide new products or services (Sarasvathy, 2004; Weick, 1979). This perspective differs from the individual-centric view in two notable ways. First, it emphasises social interactions that comprise a wider entrepreneur network, transcending individual-level factors towards collective actions (Dimov, 2011; Lumpkin, 2005; Snihur et al., 2017; Turner & Pennington, 2015). Second, it argues that opportunities are enacted through an iterative and multistage process instead of appearing in a final, ready-made form (Mitchell, Mitchell, & Smith, 2008; Tocher, Oswald, & Hall, 2015). It has also been gradually acknowledged that opportunity identification entails the transformation of individual insights into collective learning by both individual entrepreneurs and incumbent firms (Alvarez et al., 2013; Lanza & Passarelli, 2014).

Accordingly, our research adopts a constructivist view to explore opportunity identification in the incumbent firm context, where entrepreneurial opportunities come from individual ideas and then develop into potentially profitable but not yet exploited projects as organisational members engage in cooperation and coordinated actions (Barney et al., 2018; Wood & McKinley, 2010). In particular, we examine how organisational learning gives rise to opportunity. Defined as a multiple-level mode linking individual learning to that of organisations, organisational learning has been infused into research on opportunity by applying the 4I framework, which involves intuiting, interpreting, integrating, and institutionalising (Crossan, Lane, & White, 1999). The four socio-psychological processes correspond to opportunity development, as organisational members start by generating an intuitive recognition of patterns with respect to a potential business opportunity and then move towards collective integration of business propositions and institutionalised objective reality (Dutta & Crossan, 2005). At the individual level, diversified heuristics are encoded as explicit learning to guide successful opportunity capture (Bingham & Eisenhardt, 2011), which could be deemed the inception of opportunity development. After that, collective learning concerning the construction of shared values and beliefs confirms the existence of opportunity and allows individuals to act on the opportunity (Dimov, 2007b). It is the repetitive process of individuals interpreting

what they experience and organisational members collectively integrating the meaning that constitutes the opportunity (Alvarez et al., 2013).

Organisational learning underlines the constructivist view by illustrating how knowledge emerges as firm assimilates individual experiences (Corbett, 2005), resulting in a transformation of opportunity conceptualisation into opportunity objectification (Wood & McKinley, 2010). At the same time, the learning perspective fits well with the corporate entrepreneurial context because the ability to identify, assimilate and integrate fragmented knowledge into collective knowledge and form legitimate opportunities necessitates collective learning (Turner & Pennington, 2015). Therefore, in this study, we hold the view that opportunity identified at the organisation level undergoes an organisational learning process.

Although organisational learning has been highlighted in the process of constructing opportunity, most studies focus on the categorisation and conceptualisation of learning activity (Corbett, 2005; Dimov, 2007b; Lumpkin, 2005), giving little attention to the examination of specific learning actions. Thus, we believe it is necessary to include a specific construct that embodies organisational learning to empirically explore the influence of collective learning on firm-level opportunity identification.

2.2. Organisational improvisation and learning

Organisational improvisation originated from the metaphor of jazz improvisation and is defined as a fast learning behaviour with the convergence of the composition and execution of the action (Baker, Miner, & Eesley, 2003; Moorman & Miner, 1998a). Considering the new mix of routines and refinement of shared cognitive maps elicited by organisational improvisation, a number of studies regard organisational improvisation as a unique learning activity (e.g., Bergh & Lim, 2008; Hmieleski et al., 2013).

In this study, we highlight short-term, real-time learning as a basic feature of organisational improvisation (Miner et al., 2001) to explain its impact on opportunity identification. Like multiple-level actions in organisational learning, organisational improvisation also reveals learning activities from both the individual and collective layers. First, organisational improvisation denotes a prompt reaction to the environment based on real-time information (Vera & Crossan, 2004) and fast learning through continuous evaluation of an activity and modifications to its outcome (Chelariu, Johnston, & Young, 2002; Hmieleski et al., 2013). These actions are initiated mostly by individual intuitive styles to achieve spontaneity (Crossan, 1998). The complex and changing situation often requires that individuals break out of their traditional frames of reference with the application of intuitive learning (Crossan, 1998). Second, a novel result of organisational improvisation relies on the process of organisational members collectively improvising to accomplish a task, during which organisational memory is mobilised and shared experience occurs simultaneously (Krylova et al., 2016). In some cases, organisational improvisation brings about new cognitive models to reframe the way members make sense of events (Miner et al., 2001). More often, organisational improvisation manifests as a behavioural learning for its reliance on routines and the outcome of the recombination of routines (Moorman & Miner, 1998b; Vera & Crossan, 2004). Although there is no assurance of the retention of improvisational products, the existing literature has proven that at the end of improvisation learning, some

organisations intentionally preserve novel products and processes to form new routines (Miner et al., 2001; Mirvis, 1998). Under such circumstances, improvisation takes effect at the group or organisational level to propel knowledge integration (Mohannak, 2014). These results implicitly resonate with what organisational learning process creates in terms of individual intuition learning and collective interpretation and integration (Crossan et al., 1999).

3. Hypotheses development

3.1. Organisational improvisation and opportunity identification

It is proposed that opportunity is constructed from intuition, interpretation, integration and institution within organisational learning processes (Dimov, 2007b; Dutta & Crossan, 2005). Based on this learning perspective, we argue that improvisational learning facilitates both individual insight generation and collective opportunity elaboration, which ultimately results in a better identification of opportunities in incumbent firms.

First, organisational improvisation is a spontaneous process guided by intuitive action (Crossan & Sorrenti, 2003; Vera & Crossan, 2004). Intuition is defined as 'the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience' (Weick, 1995, p. 25). Without much reasoning, intuition stems mainly from subconscious thinking (Vaghely & Julien, 2010). Organisational improvisation, therefore, creates a learning process in which cognitive pattern recognition is mobilised to act on real-time situations (Crossan et al., 1999). This real-time pattern recognition is key to the ability to make novel connections, perceive new or emerging relationships, and discern possibilities that have not been previously identified (Crossan et al., 1999), which could be seen as the initial entrepreneurial insight leading to potential opportunities (Dimov, 2007b). Thus, organisational improvisation is argued to inspire novel thinking and generate entrepreneurial intentions, which has also been empirically validated in Hmieleski and Corbett's (2006) work.

Second, organisational improvisation is provoked by a reaction to an unplanned situation (Moorman & Miner, 1998a) that is full of ambiguity and uncertainty. With informational limits, incongruent opinions are likely to emerge because organisational members could barely refer to the accepted paradigm to integrate their ideas (Chelariu et al., 2002). To achieve cooperation and coordination, members involved in improvisation must be fully engaged in listening, communication and actively constructing ongoing situations (Crossan, 1998). As a result, interpretation, which is the process of explaining an insight or idea to oneself and to others, is promoted with improvisational learning. Meanwhile, improvisation has been proposed to facilitate knowledge transfer across individuals and units for the coordination and conflict management it includes (Krylova et al., 2016). It offers an effective knowledge-sharing circumstance in which organisational members are willing to accept and build on other members' ideas to bring about workable solutions in a constrained time (Krylova et al., 2016; Vera & Crossan, 2005). It also implies a large number of social interactions to improve the quality of the preliminary idea and, later, the refinement and elaboration of the opportunity (Wood & McKinley, 2010). The enlargement of shared information through interactions also reduces the uncertainty of opportunity that organisational members perceive and thus

improves opportunity viability (Tocher et al., 2015). Therefore, by means of organisational improvisation, a shared understanding of the solution is generated by interpreting and integrating individuals' initial ideas with the aim of reaching a collective learning result (Dutta & Crossan, 2005).These processes make firms more likely to identify and elaborate new and as-yet-undiscovered opportunities by processing and recombining individual knowledge. Thus, we propose the following hypothesis:

Hypothesis 1: All else being equal, the more an incumbent firm adopts organisational improvisation, the more opportunities are identified.

3.2. The moderating effects of organisational structure and culture

Organisational structure and culture are two pillars underpinning the implementation of organisational learning (Popper & Lipshitz, 1998). Specifically, structure is argued to influence the learning effect by facilitating or impeding the conversation that could increase shared understanding (Crossan et al., 1999) and modifications of beliefs and actions through learning (Fiol & Lyles, 1985). Structures that provide flexibility for organisational members may help the firm put its improvisation skills to good use (Krylova et al., 2016). In addition to having a contextual impact on the organisational structure, culture also exerts an influence on learning effect in an informal way (Fiol & Lyles, 1985; Sinkula et al., 1997). When the firm values experimental culture and bears high tolerance for error, members share the perception that trial-and-error is permissive. This type of culture may allow mistakes as a source of learning and innovation and may promote the improvisational skills to their full potential (Pina e Cunha, Vieira da Cunha, & Kamoche, 1999; Vera & Crossan, 2004). Below, we expound the two moderating effects.

3.2.1. The moderating effects of formal control

We first investigate the role of organisational structure via the level of formal control. Formalisation[1] refers to the presence of written rules and procedures (Lin & Germain, 2003). Associated with rigidity and inflexibility, formal control is presumed to be unfavourable when firms acquire and utilise knowledge (Zaltman, 1979). We argue that formal control will weaken the effects of improvisational learning by limiting the scope of individual knowledge that could be mobilised and impeding the process of developing insight into a collectively accepted opportunity.

First, the steps of generating intuition and interpretation within knowledge sharing can be impeded by a high level of formal control (Crossan et al., 1999; Tsai, 2002). Organisational improvisation is often achieved by face-to-face communication and nonverbal routines. However, when the organisation has high formal control, improvisational learning would be executed in a constrained field in which information processing channels are limited and the information transfer among different units is regulated (McGrath, 2001). At the same time, knowledge transfer under the formal structure is prone to omit details and restrain nonverbal routines (Brown & Duguid, 1991). As a result, members will have limited access to other functional areas for informal interactions (Lin & Germain, 2003), and the outcome of improvisation under this circumstance would be simply minor deviations from current routines, such as musicians adding embellishments to existing melodies (Moorman &

Miner, 1998a; Zack, 2000). Hence, it reduces the possibility that improvisational learning will generate creative insights from these deviations. In contrast, flexible structure encourages organisational members to move beyond their narrow job descriptions and leverage other members' knowledge for greater collective learning effects (Vera, Nemanich, Vélez-Castrillón, & Werner, 2016). Higher autonomy enables organisational members to commit more to on-going exploration and to be more motivated in knowledge sharing (McGrath, 2001).

Second, knowledge integration in improvisational learning is likely to be discouraged under highly formalised structures. Because improvisation usually occurs in abrupt situations where actors need to react and interact quickly, fluidity in communication and actions is required throughout the entire process (Pina e Cunha et al., 1999; Vera & Crossan, 2005). Formal rules could be a distraction as organisational members intend to integrate knowledge and comply with established procedures simultaneously. The distraction would interrupt the knowledge integration even though they have individually come up with novel ideas. In contrast, with looser control, members will be endowed with individual discretion to improvise in a coherent way. In addition, organisations comprising minimal structures will be more capable of empowering organisational members to proceed work efficiently with high autonomy while helping them concentrate on the common goal (Vera et al., 2016). Therefore, even though formal control improves the efficiency of learning execution, which reveals itself more in opportunity exploitation, it may harm the effect of learning on the exploratory process of opportunity identification. Thus, we propose that the more formally the organisation is structured, the less opportunity identification is achieved through improvisational learning. Hence,

Hypothesis 2: The higher the level of an organisation's formal control, the weaker the positive relationship between organisational improvisation and opportunity identification in incumbent firms.

3.2.2. The moderating effects of tolerance for failure

Tolerance for failure is a critical aspect of organisational culture that allows for experiments and for exploring the feasibility of innovative ideas (Kabue & Kilika, 2016). Thus, we can deduce two reasons why tolerance for failure has moderating effects on the learning effects of improvisation.

First, with a lack of planning, improvisation could ultimately result in unsystematic exploration and few immediate gains (Miner et al., 2001). Uncertainty and risks confront organisational members during the explorative learning process. Only in failure-tolerant firms are experimentation and exploration with high odds of failure regarded not as a burden but as acceptable learning activities. Therefore, the experimental culture has been examined to strengthen the positive influence of improvisation on firms' innovation outcomes because it provides more psychological safety for employees when engaging in improvisation (Vera & Crossan, 2005). Likewise, they could promote the frequency of exploration across boundaries and bring up new ideas during the improvisational process, resulting in a wider variety of insights for opportunity identification.

Second, a tendency to tolerate failure grants more entrepreneurial orientation during the improvisational process, with which the firm is arguably more likely to generate insights

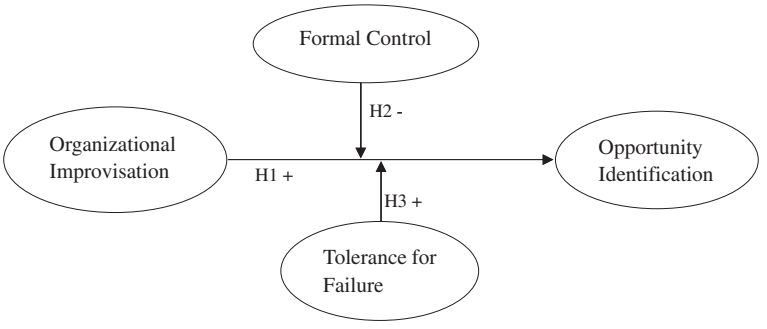

Figure 1. Conceptual model.

adapted to environmental changes (Hornsby, Kuratko, & Zahra, 2002). Meanwhile, firms that are entrepreneurially oriented would maintain a proactive stand towards collective learning and the institutionalisation of new knowledge (Dutta & Crossan, 2005). Therefore, with a high level of tolerance for failure, organisational members are more likely to extract improvisational practices into institutionalised memory, which is manifested in a collective understanding of the potential opportunity. It is thus a positive contextual factor that facilitates opportunity identification through the improvisational learning process, which emphasises experimentation and exploration. Therefore, we propose our final hypothesis:

Hypothesis 3: The higher the level of an organisation's tolerance for failure, the stronger the positive relationship between organisational improvisation and opportunity identification of incumbent firms.

Figure 1 shows the conceptual framework of this study. The model assumes that organisational improvisation has positive effect on opportunity identification. Additionally, formal control and tolerance for failure weakens and strengthens this effect respectively.

4. Methodology

4.1. Data sources and sample

This research focuses on whether improvisational learning gives rise to opportunity identification in incumbent firms. Because the independent variable and dependent variable are operationalised to imply a general disposition towards or capability/outcome for specific behaviours in organisations, it is reasonable to implement a survey study to test our hypotheses to achieve the needed credibility. The widespread adoption of survey data to measure organisational improvisation and opportunity identification in prior research also justifies the methodology of this study (e.g., Hmieleski & Corbett, 2006; Kyriakopoulos, 2011; Ozgen & Baron, 2007; Turner & Pennington, 2015).

Therefore, we conducted a survey in 2015–2016, collecting first-hand data from firms, mainly in Guangdong and Zhejiang provinces, the most industrialised areas in China. We chose China as our research context because it has undergone great economic transformation

and spectacular economic rise, impelling and enabling firms to upgrade and innovate through intrapreneurship (Yiu & Lau, 2008). We initially reviewed literature to generate an English-language survey (Danneels, 2008; Ma, Huang, & Shenkar, 2011; Moorman & Miner, 1998a). Then, we translated the survey into Chinese using conventional back-translation (Brislin, 1980). We interviewed top managers to see how the scale fit the Chinese context. Then, we conducted a pre-test to verify and refine the questionnaire via a sample of 20 corporate CEOs whose data were excluded from the following sample.

We formally sent a letter of request to 1200 random firms from a directory for the Guangdong and Zhejiang industrial association to invite their participation. Because this study examines improvisation and opportunity at the organisational level, we asked respondents to report their positions in firms and screened out those observations that were not from executives. To guarantee the data quality, we made a promise that we would send a detailed analysis to those who responded (Converse, Wolfe, Huang, & Oswald, 2008). From those requests, 291 executives responded through email. Excluding incomplete data, the final sample comprised 282 firms, for an overall response rate of 23.5%. Among all respondents, 14% served as chairman of the board, 27% were CEOs, 35% were from the top management team, and the remaining 24% were middle-level managers. The likelihood of a nonresponse bias was tested by splitting the sample into two groups: those who responded early and those who responded late (Armstrong & Overton, 1977). A t-test of two groups in terms of firm age, scale, and profitability revealed no significant differences, suggesting that nonresponse bias is not an issue in this study. Table 1 displays the descriptive characteristics of our final sample.

Table 1. Sample distribution.

Variable	Category	Frequency	Percentage (%)
Firm age	≤3 years	41	14.54
	3–8 years	72	25.53
	8–15 years	67	23.76
	≥15 years	102	36.17
Firm size (employee number)	≤300	131	46.45
	300–500	25	8.9
	500–2000	55	19.50
	2000–5000	38	13.48
	>5000	33	11.70
R&D intensity	0%	46	16.31
	0%–1%	32	11.34
	1%–3%	47	16.67
	3%–10%	66	23.40
	10%–30%	46	16.31
	≥30%	45	15.96
Industry	Agriculture	6	2.13
	Manufacturing	144	51.06
	Services	112	39.72
	Others	20	7.10
Ownership	State-owned	13	4.61
	Foreign controlled	16	5.67
	Domestic private firms	203	72.99
	Domestic public firms	50	17.73

N = 282

4.2. Measurements

4.2.1. Opportunity identification (by incumbent firms)

The dependent variable was opportunity identification. Based on the three-item scale from Ma et al. (2011), we asked respondents to rate the following statements: (a) while going about our day-to-day activities, our firm sees potential new ideas (e.g., new products, new markets, and new ways of organising the firm) all around; (b) our firm has a special alertness or sensitivity towards new opportunities (e.g., new products, new markets, and new ways of organising the firm); and (c) seeing potential new opportunities (as mentioned above) does not come very naturally to our firm (reversed-coded). Responses were rated on a five-point Likert scale, with 1 = strongly disagree or very low and 5 = strongly agree or very high (Cronbach's alpha = 0.890).

4.2.2. Organisational improvisation

The independent variable was organisational improvisation. We measured it using three items developed by Moorman and Miner (1998a), which has been frequently adopted in innovation management research (Akgün, Keskin, Byrne, & Aren, 2007; Kyriakopoulos, 2011; Vera et al., 2016). The three items are as follows: (a) we figured out our action as we went along; (b) we improvised when carrying out this action; (c) we ad-libbed the action/ we did not ad-lib the action. Responses were rated on a five-point Likert scale, with 1 = very unlikely to improvise and 5 = very likely to improvise (Cronbach's alpha = 0.863).

4.2.3. Formal control

Two moderators were measured in this study. The first is the level of formal control. In view of the difference between the Chinese business environment and that in western countries, we referred to Lin & Germain's (2003) work to measure the extent to which the firm exerts formal control in daily operations. This measure was adapted from Khandwalla's (1974) version to apply to Chinese enterprises. Respondents were asked to rate the frequency of using (a) the comprehensive management control and information system; (b) the use of cost centres for cost control; (c) the quality control of the operation using sampling and other methods; and (d) the formal appraisal of personnel (Cronbach's alpha = 0.828). Responses were rated on a five-point Likert scale.

4.2.4. Tolerance for failure

Four items from Danneels (2008) were used to measure the culture moderator – tolerance for failure: (a) it is understood that failure is a necessary part of success; (b) management does not understand that when you try something new, you sometimes fail (reversed-coded); (c) failure is accepted as an inevitable by-product of taking a lot of initiative; and (d) a mistake is seen as an opportunity to learn (Cronbach's alpha = 0.846). Responses were rated on a five-point Likert scale.

4.2.5. Controls

To control for alternative explanations for the results, we added several control variables. The level of environmental competitiveness has long been emphasised as an important factor influencing the outcome of organisational improvisation

(Kamoche, Cunha, & da Cunha, 2003). Thus, we included competitive intensity, a construct that consists of three items and was adapted from Jaworski and Kohli (1993) (Cronbach's alpha = 0.861). Learning orientation should positively correlate with improvisation; thus, we assessed it via a measure composed of three dimensions: commitment to learning, shared vision and open-mindedness (Sinkula et al., 1997). Firm age also has an impact on opportunity identification because younger firms are more likely to demonstrate a high entrepreneurial orientation and display a higher frequency of opportunity identification than old firms (Anderson & Eshima, 2013). Likewise, firm size was also considered because of its potential effect on opportunity identification (Gielnik, Zacher, & Frese, 2012). Respondents were asked to report the number of employees. To avoid the influence of measurements with different dimensions, we sorted the values into five categories in the data processing step, as shown in Table 1. We also asked the interviewees to estimate the relative profitability of their firms in terms of earnings in corresponding industries. In addition, to control for the impacts of firms' innovation orientation on the manifestation of organisational improvisation (Larsen & Bogers, 2014), we measured R&D intensity by asking for the ratio of R&D investment to total sales and categorised the numbers into six items. Lastly, we added the industry dummies (agriculture, manufacturing, service and other) and dummy variables for the type of ownership structure (SOE, foreign-controlled, domestic private and domestic public) to control for the possible influence on the overall entrepreneurial propensity (Liu, Luo, & Shi, 2002).

4.3. Reliability and validity

First, we examined variable reliability. All constructs' Cronbach's alphas exceeded 0.7 (Nunnally, 1978). The results (see Table 2) reveal that the variables' composite reliability (CR) exceeded the 0.7 benchmark (Hair, Sarstedt, Ringle, & Mena, 2012). The average variance extracted (AVE) was calculated to estimate the convergent validity: the results ranging from 0.551 to 0.737 abated this concern (Fornell & Larcker, 1981). Then, we used Mplus 7 to examine the model fit. The results showed that the model fit the data well ($\chi 2(101) = 172.79$, $p < 0.001$, CFI = 0.97; TLI = 0.97; RMSEA = 0.046; SRMR = 0.040). All factor loadings were significant. To further assess the discriminant validity, we compared the four-factor model with alternative models. The results listed in Table 3 show that the fit indices of the four-factor model were much better than those of any other alternative

Table 2. Reliability and validity.

Construct	Cronbach's α	AVE	CR
Organisational Improvisation	0.863	0.684	0.866
Opportunity Identification	0.890	0.737	0.893
Formal Control	0.828	0.551	0.831
Tolerance for Failure	0.846	0.588	0.851
Competitive Intensity	0.865	0.689	0.868

AVE, average variance extracted; CR, composite reliability

Table 3. Model comparison in CFA analysis.

Model	χ2	df	Δχ2	CFI	TLI	RMSEA	SRMR
Model 1 four factor model	122.11	71		0.973	0.966	0.051	0.042
Model 2 three-factor model (IM+CON, OPP, FA)	510.57	74	388.46(3)***	0.771	0.718	0.145	0.140
Model 3 three-factor model (IM+FA, OPP, CON)	615.30	74	493.19(3)***	0.716	0.651	0.161	0.162
Model 4 three-factor model (IM, CON+FA, OPP)	560.96	74	438.85(3)***	0.745	0.686	0.153	0.130
Model 5 two-factor model (IM, CON+FA+OPP)	910.75	76	788.64(5)***	0.562	0.476	0.197	0.170
Model 6 one-factor model (IM+ CON+FA+OPP)	1506.17	77	1384.06(6)***	0.251	0.114	0.257	0.235

IM, organisational improvisation; OPP, opportunity identification; CON, formal control; FA, tolerance for failure
CFI, comparative fit index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual
N = 282. Significance levels are based on two-tailed tests for all models and coefficients.
*$p < .05$, **$p < .01$, ***$p < .001$, two-tailed tests.

model, indicating good discriminant validity. Table 4 shows the descriptive statistics and pairwise correlations in this study.

4.4. Common method bias

Because we used a survey to collect organisational-level data, we needed to examine the common method bias (CMB) in this study. Therefore, we applied Harman's one-factor test (Podsakoff, MacKenzie, & Podsakoff, 2012). All variables for the formative constructs were entered into a single exploratory factor analysis. The results revealed that no single factor emerged from this analysis, nor was there a general factor that could account for the majority of variance in these variables: five factors with eigenvalues greater than one emerged. The first factor explained only 23.8% of the variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, we conducted a CFA model in which all items were linked to a single factor. As presented in Table 3, the single-factor model did not fit the data well ($\chi2(df) = 1506.17(77)$, CFI = 0.251, TLI = 0.114, RMSEA = 0.257). Thus, CMB is unlikely to be a significant threat in this study.

5. Results

5.1. Hypothesis tests

Before estimating the model, we tested the multicollinearity among all variables. To minimise the threat of multicollinearity, we mean-centred the independent and moderating variables. Meanwhile, we calculated variance inflation factors (VIFs) to assess the multicollinearity. In all models, the average VIF did not exceed 1.47. Table 4 also reveals that several variables were moderately correlated (Hair, Anderson, Tatham, & Black, 1998). Therefore, multicollinearity does not appear to be a substantive concern.

Table 5 shows the results. We implemented OLS regressions to test our hypotheses. We regarded all single-term variables (e.g., firm age, size) as continuous except industry and ownership structure dummies, following previous studies that commonly assume an interval scale rather than an ordinal scale for these variables (Cai, Guo, Fei, & Liu, 2017; Wu, Liu, & Zhang, 2017). Model 1 provides the baseline results with only the effects of the control variables. Hypothesis 1 predicts that organisational improvisation has a positive effect on opportunity identification. This hypothesis was tested in model 2, which yielded a significant positive relationship ($\beta = 0.16$, $p < 0.001$), supporting

Table 4. Descriptive statistics and bivariate correlations.

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Opportunity	3.88	0.74									
2. Improvisation	2.84	0.92	0.10								
3. Formal control	3.72	0.87	0.27***	−0.28***							
4. Tolerance for failure	3.92	0.72	0.28***	−0.01	0.19***						
5. Firm age	2.81	1.08	−0.24***	−0.05	0.19***	−0.06					
6. Firm size	2.85	1.03	−0.02	0.17***	−0.41***	0.04	−0.54***				
7. Profitability	3.06	0.89	0.04	−0.19***	0.28***	−0.10*	0.41***	−0.52***			
8. R&D intensity	3.65	1.73	0.14**	−0.05	0.14**	0.11*	0.07	−0.14**	0.04		
9. Competitive intensity	3.95	0.93	−0.10	0.03	0.19***	0.01	0.12**	−0.23***	0.22***	−0.13**	
10. Learning orientation	3.87	0.54	0.50***	−0.20***	0.44***	0.42***	−0.08	−0.14**	0.11*	0.13**	0.00

N = 282. *$p < .05$, **$p < .01$, ***$p < .001$ two-tailed tests.

Table 5. Regression results.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Firm age	−0.14***	−0.15***	−0.16***	−0.15***	−0.16***
Firm size	−0.06	−0.05	−0.03	−0.05	−0.03
Profitability	0.08	0.10*	0.08	0.11*	0.09
R&D intensity	0.03	0.03	0.04	0.03	0.03
Competitive intensity	−0.07	−0.08*	−0.10**	−0.09*	−0.10**
Learning orientation	0.67***	0.71***	0.64***	0.66***	0.61***
Organisational improvisation (OI)		0.16***	0.20***	0.15***	0.19***
Formal control			0.13**		0.12**
Tolerance for failure				0.08	0.06
OI × Formal control			−0.10*		−0.10*
OI × Tolerance for failure				−0.01	0.01
Constant	1.61**	1.13**	0.82	1.01*	0.74
F	13.06***	13.91***	13.05***	12.19***	11.57***
R^2	0.37	0.40	0.42	0.41	0.43
Adjusted R^2	0.34	0.38	0.39	0.37	0.39
R^2 change		0.03*	0.02*	−0.01	

N = 282. Significance levels are based on two-tailed tests for all models and coefficients; all industry and ownership structure dummies are included

*$p < .05$, **$p < .01$, ***$p < .001$.

Hypothesis 1. We then tested models 3–5 to examine the moderating effects. From model 3, a negative moderating effect ($\beta = -0.10$, $p < 0.05$) was provided to support Hypothesis 2. The added interaction term in model 3 increased the R-square value significantly compared with model 2 ($\Delta R^2 = 0.02$, $F(2, 266)$, $p < 0.05$), supporting H2. To further clarify the moderating effect, we delineated slopes at high and low levels of formal control. We defined the high and low values as plus and minus one standard deviation from the mean (Aiken & West, 1991). Figure 2 illustrates the plot of organisational improvisation interaction with high formal control, suggesting that the positive relationship between improvisation and opportunity identification is weakened under a high level of formal control.

Hypothesis 3 proposes that tolerance for failure positively moderates the relationship between organisational improvisation and opportunity identification. However, the results

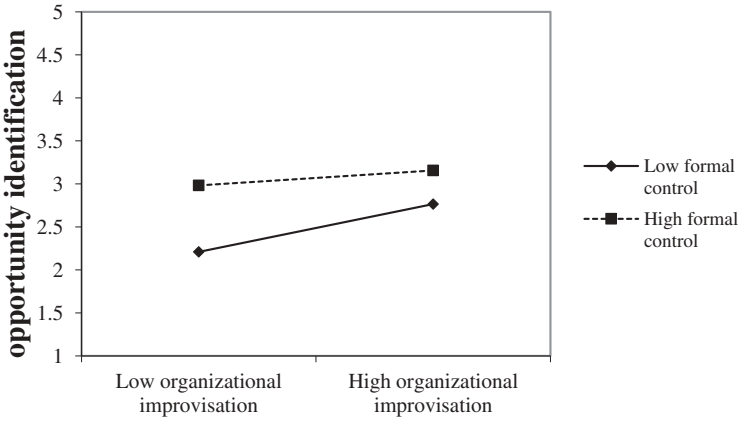

Figure 2. Moderating effect of formal control on the relationship between organisational improvisation and opportunity identification.

do not support our hypothesis. The coefficient of organisational improvisation multiplied by tolerance for failure is slightly negative and not significant ($\beta = -0.01$, $p > 0.05$), and the R-square value shows no significant change compared to model 2 ($\Delta R^2 = 0.01$, $F(2, 266)$, $p > 0.05$). Finally, we input two interaction terms in a full model (model 5); the result indicates that only the moderating effect of formal control was significant in the full model ($\beta = -0.10$, $p < 0.05$).

5.2. Robustness analysis

To ensure that our empirical results were not affected by our measures, we conducted additional robustness checks. Specifically, we asked firms to report the number of opportunities they identified or new businesses they exploited in the previous three years (mean = 4.97, SD = 1.86). This figure could be seen as a reflection of their ability to identify opportunities (Corbett, 2007) and a more objective measure of opportunities. We thus use this measure in a Poisson regression, keeping independent and control variables unchanged. The results partly validated our study. The positive effect of organisational improvisation still holds ($\beta = 0.05$, $p < 0.05$); however, the negative moderating effect of formal control was not significant in the new model. To improve the estimates, we then followed previous research and categorised the count of identified opportunity with relative evenly distributed proportions (Ucbasaran, Westhead, & Wright, 2009). Respondents who reported that they had identified three or fewer opportunities were assigned to category '1' (accounting for 22.7%), those who had identified four opportunities were assigned to category '2' (accounting for 28%), those who had identified five or six opportunities were assigned to category '3' (accounting for 22.3%), and those who had identified seven or eight opportunities were assigned to category '4' (accounting for 27%). The results of the ordered logit regression are quite similar to those of the former one. Table 6 presents the results. The positive influence of organisational improvisation on opportunity identification is validated, but the estimated moderating effect of formal control is no longer statistically significant. Considering that this measure is subject to recall bias and relates more to the implemented opportunities, the results may suggest that although the

Table 6. Regressions with alternative measures of opportunity.

	Number of identified opportunity		Categorical opportunity number	
Variables	Model 1	Model 2	Model 3	Model 4
Firm age	−0.01	−0.01	−0.03	−0.03
Firm size	−0.07**	−0.07*	−0.37*	−0.36*
Profitability	0.09**	0.08**	0.42**	0.42**
R&D intensity	0.01	0.01	0.07	0.07
Competitive intensity	−0.01	−0.02	−0.01	−0.02
Learning orientation	0.13*	0.11	0.63*	0.60*
Organisational improvisation (OI)	0.05*	0.05*	0.26*	0.28*
Formal control		0.03		0.07
OI × Formal control		−0.01		−0.04

N = 282. Significance levels are based on two-tailed tests for all models and coefficients; all industry and ownership structure dummies are included

*$p < .05$, **$p < .01$, ***$p < .001$.

explorative process of identifying opportunity is impeded by a formalised structure, exploitation of opportunity might benefit from the highly efficient execution that formal structure guarantees. Therefore, formalisation may exert two conflicting influences on corporate entrepreneurship processes, which requires further investigation.

In addition, to verify the learning effects of improvisation, we explored the possible mediators between improvisation and opportunity identification. Because organisational improvisation may lead to a reconfiguration of existing routines and engender an updated memory after a selective retention of improvisation outcomes (Miner et al., 2001; Moorman & Miner, 1998b), and prior knowledge is well acknowledged to premise opportunity identification (Baron & Ensley, 2006; Shane, 2000), we adopted the *knowledge base* of the firm in the mediation test. The construct of knowledge base was measured with six items, reflecting both the knowledge width and depth of the firm (Zhou & Li, 2012). We followed procedures outlined by Zhao, Lynch, and Chen (2010) as well as Preacher and Hayes (2008) to examine the mediation effect. As listed in Table 7, we first validated the positive relationship between improvisation and knowledge base in model 1 ($\beta = 0.10$, $p < 0.01$). Model 2 suggests that the knowledge base is positively related to opportunity identification ($\beta = 0.40$, $p < 0.001$). When both improvisation and knowledge base were added to the regression, the influence of improvisation on opportunity identification weakened, as shown in model 3 and model 4. In addition, we estimated the bias-corrected confidence intervals (CIs) of indirect effects from 1000 bootstrap samples. The confidential interval around the indirect effect does not include zero [0.01–0.08], and the Sobel test indicated that the knowledge base mediates 20.90% of total effects. The results provide evidence on the knowledge base's mediating effect, suggesting that improvisational learning increases the likelihood of identifying opportunity by augmenting organisational knowledge.

Table 7. Mediated regressions results.

	Knowledge base	Opportunity identification		
Variables	Model 1	Model 2	Model 3	Model 4
Firm age	−0.00	−0.15***	−0.16***	−0.16***
Firm size	−0.10	0.01	−0.03*	−0.00
Profitability	−0.00	0.08	0.10*	0.10*
R&D intensity	0.04*	0.02	0.03	0.02
Competitive intensity	−0.05	−0.06	−0.10*	−0.08*
Learning orientation	0.69***	0.35***	0.64***	0.39***
Organisational improvisation	0.10**		0.17***	0.14**
Knowledge base		0.40***		0.36***
Formal control	0.22***	−0.02	0.10*	0.03
Constant	0.40	1.25**	0.99	0.84
F	22.96	15.00	13.36	15.40
R^2	0.55	0.44	0.41	0.46
Adjusted R^2	0.48	0.41	0.38	0.43

N = 282. Significance levels are based on two-tailed tests for all models and coefficients; all industry and ownership structure dummies are included

*$p < .05$, **$p < .01$, ***$p < .001$.

6. Discussion and conclusion

6.1. Discussion of the findings

From the empirical testing, we found that organisational improvisation positively correlates with opportunity identification by incumbent firms and that formal control negatively moderates this relationship, which supports our hypotheses 1 & 2. However, the regression results do not support hypothesis 3, which predicts that a tolerance for failure will positively moderate the main effect. In fact, the estimated direction of the coefficient (tolerance for failure*improvisation) in our regression model is negative. We suppose that there may be a few possible reasons for this unexpected result. First, tolerance for failure is a construct delineating an organisational climate that emphasises experimentation (Danneels, 2008). Although this climate will often lead to more creative and novel ways of doing things, it may also lead the organisation to an 'opportunity trap' (Miner et al., 2001), that is, a situation in which the organisation fails to exploit the novel ideas obtained through the improvisation processes because it wastes too much energy on trying to incorporate all kinds of ideas explored from improvisation (Pina e Cunha et al., 1999). Organisational improvisational learning repeats a great deal but produces no systematic outcome that guides further movement (Miner et al., 2001). Knowledge produced in this situation is scattered and lacks in-depth inspection; thus, ideas may be confined to local contexts and lack necessary logical coherence (Azevedo, 2002). As a result, improvisation may produce too much exploration and too many fragmented efforts (Vendelo, 2009) that would make it difficult to generate profitable opportunities. Second, a propensity to tolerate failure may result in excessive reflection and modification of the improvisational learning process (Danneels, 2008) and thus a failure to enter into the next critical stage of opportunity development. Therefore, the statistically insignificant moderating effects of tolerance for failure on the relationship between organisational improvisation and opportunity identification may be attributed to the potential positive and negative influences it confers. We encourage future studies to explore this ambiguous issue.

6.2. Theoretical contributions

This article makes some contributions to the existing research. First, by examining the role of improvisational learning in identifying opportunities, we begin to close existing knowledge gaps with respect to how new opportunities are probed within incumbent firms. Although a few studies propose that organisational learning is an integrative process underpinning the social construction of opportunity (Dimov, 2007a; Dutta & Crossan, 2005), there has been little progress in the literature on how learning influences opportunity identification in a specific form that is more directly understood and empirically examined. We find that improvisation not only is a provisional response provoked by a sudden problem (Miner et al., 2001) but also it can be taken as a collective learning activity for new opportunity identification. That is, we argue that insight generation, interpretation, and knowledge integration are integral to improvisational learning in the process of opportunity development. Thus, we fill the gap in the entrepreneurial opportunity literature by proposing and examining a novel facilitator of opportunity identification in a corporate entrepreneurial context, with a focus on the

social construction process in opportunity identification. Meanwhile, organisational structure is found to have contextual effects. Formal control, which measures the formalisation of an organisational structure, gives implications about the circumstances under which improvisational learning will be more likely to contribute to opportunity identification. This finding enriches the literature on opportunity identification by suggesting boundaries to learning mechanisms within organisations. It is also consistent with the view that organisations with a 'semi-structure' will achieve high performance by flexibly improvising (Bingham & Eisenhardt, 2014).

Second, because little research on improvisation has paid attention to its entrepreneurial outcomes, we used survey data to demonstrate that organisational improvisation as a specific learning activity could lead to one critical entrepreneurial action – identifying new entrepreneurial opportunities. In this article, we do not confine improvisation as a novel activity but rather a collective learning event that concentrates on knowledge sharing and integration. Although some research regards improvisation as an antecedent of organisational learning (Chelariu et al., 2002; Vendelo, 2009), it is directly deemed as 'experiential learning' in this study for the intuition, interpretation, and integration it implies (Crossan et al., 1999). Prior studies on organisational improvisation have demonstrated the innovative results it brings to organisations, given the assumption that opportunities exist (Valaei, Rezaei, & Ismail, 2017; Vera & Crossan, 2005). However, we found that it also provokes entrepreneurial opportunity by helping organisations to form new businesses. This finding helps us to gain a thorough understanding of organisational improvisation theory and enriches research perspectives by investigating the very process it unfolds. Meanwhile, the learning effects validated in this study extend the potential of future studies of organisational improvisation of being operationalised as a specific learning activity in a broader area of organisational studies (Bergh & Lim, 2008).

6.3. Practical implications

This study has some practical implications as well. First, we found that in addition to the explanation that improvisation is provoked by opportunities (Baker et al., 2003), improvisation can also trigger the generation of new ideas and facilitate opportunity development. Thus, it provides information for entrepreneurs and managers that improvisation is not only an alternative option for problem solving but also inspires and incubates new opportunities. On this account, we suggest that managers encourage organisational members to intentionally adopt improvisation and cultivate their improvisation skills. Effective improvisation could be achieved, for instance, through specific training programmes or accumulated improvisation practices (Chelariu et al., 2002; Vera & Crossan, 2005).

In addition, due to the conditional positive effect of improvisation on identifying opportunity, we suggest that entrepreneurs and managers are aware that there is a discrepancy between improvisational learning and rational decision making. Too much formal control could impose restrictions on improvisation. Therefore, an appropriate balance between improvisation and formalisation is recommended in entrepreneurial processes.

6.4. Research limitations and future directions

This study inevitably has several limitations that should be noted in future research. The first limitation we need to address is that organisational learning, as an intrinsic mechanism for opportunity identification, cannot be easily measured and examined. Although much evidence has confirmed the learning effects that improvisation generates (Bergh & Lim, 2008; Miner et al., 2001) and the positive influence that organisational learning has on the entrepreneurial process (Bingham & Eisenhardt, 2011; Turner & Pennington, 2015), improvisation is only one possible explanation for this complex learning process. Other behavioural and cognitive aspects of organisational learning may have to be taken into account to verify their impacts, respectively. Thus, this study leaves open questions of whether other specific learning types promote opportunity identification for incumbent firms, such as experimental learning and trial-and-error learning.

Furthermore, contextual constructs such as goal orientation, participatory decision making, and learning orientation, as embedded in an organisational culture, have been examined in terms of their effects on organisational learning processes (Chadwick & Raver, 2015; Flores, Zheng, Rau, & Thomas, 2012), permitting potential insights into what can be further explored in terms of the boundary conditions that improvisation imposes on opportunity identification. In addition, the measures of organisational improvisation adopted in this study derive from the research published over quite a long period of time (Moorman & Miner, 1998a). Despite several follow-up studies using this three-item scale (Akgün, et al., 2007; Kyriakopoulos, 2011; Vera et al., 2016), we suggested that future studies develop a more advanced measurement of organisational improvisation to enhance the reliability and validity of this construct.

Finally, this study derived empirical results only for Chinese firms. It is a concern that our findings may be country specific. Thus, future research should take note of samples from other countries. Another limitation comes from the cross-sectional data. It is difficult to establish causality in this study, as some research presumes that improvisation emerges under the pressure of enacting opportunity (Chelariu et al., 2002; Miner et al., 2001). Hence, future studies should consider a longitudinal research design. In addition, it would be better if some measures could be derived from objective data sources, such as coding the number of identified opportunities from published data sources to increase the validity of constructs.

In conclusion, drawing on the constructivist view of entrepreneurial opportunity identification, this study suggests that organisational improvisation, as a specific learning activity, has a positive impact on opportunity identification by incumbent firms by facilitating intuition, interpretation, and integration during the opportunity development process. The survey data validated this positive relationship and found that the effect varies with different levels of formal organisational control. Further research might also examine interesting issues of how other forms of learning give rise to entrepreneurial opportunity in incumbent firms.

Note

1. Formalisation and formal control are used interchangeably in Lin and Germain's (2003) study with respect to its conceptual meaning, and they operationalised the construct as formal control to develop the measurement.

Acknowledgments

The authors thank the National Natural Science Foundation of China (71572204) for the generous financial support. We also gratefully acknowledge the helpful comments and suggestions of paper session participants at 2017 annual meeting of Academy of Management.

Disclosure statement

We three authors declare that we have no financial and personal relationships with other people or organizations that can inappropriately influence our work. There is no professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in the manuscript entitled 'Organizational Improvisation as a Path to New Opportunity Identification for Incumbent Firms: An Organizational Learning View'.

Funding

This work was supported by the National Natural Science Foundation of China [71572204].

ORCID

Qian Xiang http://orcid.org/0000-0002-5478-8636

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications, Inc.

Akgün, A. E., Keskin, H., Byrne, J. C., & Aren, S. (2007). Emotional and learning capability and their impact on product innovativeness and firm performance. *Technovation*, *27*(9), 501–513.

Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, *1*(1–2), 11–26.

Alvarez, S. A., Barney, J. B., & Anderson, P. (2013). Forming and exploiting opportunities: The implications of discovery and creation processes for entrepreneurial and organizational research. *Organization Science*, *24*(1), 301–317.

Anderson, B. S., & Eshima, Y. (2013). The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. *Journal of Business Venturing*, *28*(3), 413–429.

Arenius, P., & De Clercq, D. (2005). A network-based approach on opportunity recognition. *Small Business Economics*, *24*(3), 249–265.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*, 396–402.

Azevedo, J. (2002). Updating organizational epistemology. In Baum, J. A. C. (Ed.), *Companion to organizations* (pp. 715–732). Oxford: Blackwell Publishers Ltd.

Baker, T., Miner, A. S., & Eesley, D. T. (2003). Improvising firms: Bricolage, account giving and improvisational competencies in the founding process. *Research Policy*, *32*(2), 255–276.

Barney, J. B., Foss, N. J., & Lyngsie, J. (2018). The role of senior management in opportunity identification: Direct involvement or reactive selection? *Strategic Management Journal*, *39*(5), 1325–1349.

Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, *13*(4), 275–294.

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, *52*(9), 1331–1344.
Bergh, D. D., & Lim, E. N. K. (2008). Learning how to restructure: Absorptive capacity and improvisational views of restructuring actions and performance. *Strategic Management Journal*, *29*(6), 593–616.
Best, S., & Gooderham, P. (2015). Improvisation: A legitimate strategy in the face of adversity. *Small Enterprise Research*, *22*(1), 49–68.
Bingham, C. B., & Eisenhardt, K. M. (2011). Rational heuristics: The 'simple rules' that strategists learn from process experience. *Strategic Management Journal*, *32*(13), 1437–1464.
Bingham, C. B., & Eisenhardt, K. M. (2014). Response to Vuori and Vuori's commentary on "heuristics in the strategy context". *Strategic Management Journal*, *35*(11), 1698–1702.
Bloodgood, J. M., Hornsby, J. S., Burkemper, A. C., & Sarooghi, H. (2015). A system dynamics perspective of corporate entrepreneurship. *Small Business Economics*, *45*(2), 383–402.
Brislin, R. W. (1980). Cross-cultural research methods. In Altman, I., Rapoport, A., Wohlwill, J. F. (Eds.), *Environment and culture. Human behavior and environment (Advances in Theory and Research)* (Vol. 4, pp. 47–82). Boston, MA: Springer.
Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, *2*(1), 40–57.
Cai, L., Guo, R., Fei, Y., & Liu, Z. (2017). Effectuation, exploratory learning and new venture performance: Evidence from China. *Journal of Small Business Management*, *55*(3), 388–403.
Casson, M. (1982). *The entrepreneur: An economic theory*. Totowa, NJ: Barnes & Noble Books.
Chadwick, I. C., & Raver, J. L. (2015). Motivating organizations to learn: Goal orientation and its influence on organizational learning. *Journal of Management*, *41*(3), 957–986.
Chelariu, C., Johnston, W. J., & Young, L. (2002). Learning to improvise, improvising to learn: A process of responding to complex environments. *Journal of Business Research*, *55*(2), 141–147.
Converse, P. D., Wolfe, E. W., Huang, X., & Oswald, F. L. (2008). Response rates for mixed-mode surveys using mail and e-mail/web. *American Journal of Evaluation*, *29*(1), 99–107.
Corbett, A. C. (2005). Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice*, *29*(4), 473–491.
Corbett, A. C. (2007). Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal of Business Venturing*, *22*(1), 97–118.
Crossan, M. M. (1998). Improvisation in action. *Organization Science*, *9*(5), 593–599.
Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: From intuition to institution. *Academy of Management Review*, *24*(3), 522–537.
Crossan, M. M., & Sorrenti, M. (2003). Making sense of improvisation. In Walsh, J. P., & Huff, A. S. (Eds.), *Advances in strategic management* (Vol. 14, pp. 37–58). Greenwich, CT: JAI Press.
Danneels, E. (2008). Organizational antecedents of second-order competences. *Strategic Management Journal*, *29*(5), 519–543.
Dimov, D. (2007a). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, *31*(5), 713–731.
Dimov, D. (2007b). From opportunity insight to opportunity intention: The importance of person-situation learning match. *Entrepreneurship Theory and Practice*, *31*(4), 561–583.
Dimov, D. (2011). Grappling with the unbearable elusiveness of entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, *35*(1), 57–81.
Dutta, D. K., & Crossan, M. M. (2005). The nature of entrepreneurial opportunities: Understanding the process using the 4I organizational learning framework. *Entrepreneurship Theory and Practice*, *29*(4), 425–449.
Fiol, C. M., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review*, *10*(4), 803–813.
Flores, L. G., Zheng, W., Rau, D., & Thomas, C. H. (2012). Organizational learning: Subprocess identification, construct validation, and an empirical test of cultural antecedents. *Journal of Management*, *38*(2), 640–667.
Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Foss, N. J., & Lyngsie, J. (2014). The strategic organization of the entrepreneurial established firm. *Strategic Organization*, *12*(3), 208–215.
Gielnik, M. M., Zacher, H., & Frese, M. (2012). Focus on opportunities as a mediator of the relationship between business owners' age and venture growth. *Journal of Business Venturing*, *27*(1), 127–142.
Guth, W. D., & Ginsberg, A. (1990). Corporate entrepreneurship - Introduction. *Strategic Management Journal*, *11*, 5–15.
Hair, J., Anderson, R. E., Tatham, R. L., & Black, W. (1998). *Multivariate data analysis with readings*. Englewood Cliffs, NJ: Prentice-Hall.
Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, *40*(3), 414–433.
Hills, G. E., Lumpkin, G. T., & Singh, R. P. (1997). Opportunity recognition: Perceptions and behaviors of entrepreneurs. *Frontiers of Entrepreneurship Research*, *17*(4), 168–182.
Hmieleski, K. M., Carr, J. C., & Baron, R. A. (2015). Integrating discovery and creation perspectives of entrepreneurial action: The relative roles of founding CEO human capital, social capital, and psychological capital in contexts of risk versus uncertainty. *Strategic Entrepreneurship Journal*, *9*(4), 289–312.
Hmieleski, K. M., & Corbett, A. C. (2006). Proclivity for improvisation as a predictor of entrepreneurial intentions. *Journal of Small Business Management*, *44*(1), 45–63.
Hmieleski, K. M., Corbett, A. C., & Baron, R. A. (2013). Entrepreneurs' improvisational behavior and firm performance: A study of dispositional and environmental moderators. *Strategic Entrepreneurship Journal*, *7*(2), 138–150.
Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: Assessing a measurement scale. *Journal of Business Venturing*, *17*(3), 253–273.
Ireland, R. D., Covin, J. G., & Kuratko, D. F. (2009). Conceptualizing corporate entrepreneurship strategy. *Entrepreneurship Theory & Practice*, *33*(1), 19–46.
Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, *57*(3), 53–70.
Kabue, L. W., & Kilika, J. M. (2016). Firm resources, core competencies and sustainable competitive advantage: An integrative theoretical framework. *Journal of Management and Strategy*, *7*(1), p98.
Kamoche, K., Cunha, M. P. E., & da Cunha, J. V. (2003). Towards a theory of organizational improvisation: Looking beyond the jazz metaphor. *Journal of Management Studies*, *40*(8), 2023–2051.
Khandwalla, P. N. (1974). Mass output orientation of operations technology and organizational structure. *Administrative Science Quarterly*, *19*, 74–97.
Kirzner, I. M. (1979). *Perception, opportunity, and profit*. Chicago: University of Chicago Press.
Krylova, K. O., Krylova, K. O., Vera, D., Vera, D., Crossan, M., & Crossan, M. (2016). Knowledge transfer in knowledge-intensive organizations: The crucial role of improvisation in transferring and protecting knowledge. *Journal of Knowledge Management*, *20*(5), 1045–1064.
Kyriakopoulos, K. (2011). Improvisation in product innovation: The contingent role of market information sources and memory types. *Organization Studies*, *32*(8), 1051–1078.
Lanza, A., & Passarelli, M. (2014). Technology change and dynamic entrepreneurial capabilities. *Journal of Small Business Management*, *52*(3), 427–450.
Larsen, H., & Bogers, M. (2014). Innovation as improvisation 'in the shadow'. *Creativity and Innovation Management*, *23*(4), 386–399.
Lin, X. H., & Germain, R. (2003). Organizational structure, context, customer orientation, and performance: Lessons from Chinese state-owned enterprises. *Strategic Management Journal*, *24* (11), 1131–1151.
Liu, S. S., Luo, X., & Shi, Y. Z. (2002). Integrating customer orientation, corporate entrepreneurship, and learning orientation in organizations-in-transition: An empirical study. *International Journal of Research in Marketing*, *19*(4), 367–382.

Luksha, P. (2008). Niche construction: The process of opportunity creation in the environment. *Strategic Entrepreneurship Journal*, *2*(4), 269–283.
Lumpkin, G. T. (2005). The role of organizational learning in the opportunity-recognition process. *Entrepreneurship Theory and Practice*, *29*(4), 451–472.
Ma, R., Huang, Y. C., & Shenkar, O. (2011). Social networks and opportunity recognition: A cultural comparison between Taiwan and the United States. *Strategic Management Journal*, *32*(11), 1183–1205.
McGrath, R. G. (2001). Exploratory learning, innovative capacity, and managerial oversight. *Academy of Management Journal*, *44*(1), 118–131.
Miner, A. S., Bassoff, P., & Moorman, C. (2001). Organizational improvisation and learning: A field study. *Administrative Science Quarterly*, *46*(2), 304–337.
Mirvis, P. H. (1998). Practice improvisation. *Organization Science*, *9*(5), 586–592.
Mitchell, R. K., Mitchell, J. R., & Smith, J. B. (2008). Inside opportunity identification: Enterprise failure, cognition, and the creation of opportunities. *Strategic Entrepreneurship Journal*, *2*(3), 225–242.
Mohannak, K. (2014). Challenges of knowledge integration in small and medium enterprises. *Knowledge Management & E-Learning: An International Journal*, *6*(1), 66–82.
Moorman, C., & Miner, A. S. (1998a). The convergence of planning and execution: Improvisation in new product development. *Journal of Marketing*, *62*(3), 1–20.
Moorman, C., & Miner, A. S. (1998b). Organizational improvisation and organizational memory. *Academy of Management Review*, *23*(4), 698–723.
Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
Ozgen, E., & Baron, R. A. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, *22*(2), 174–192.
Pina e Cunha, M., Vieira da Cunha, J., & Kamoche, K. (1999). Organizational improvisation: What, when, how and why. *International Journal of Management Reviews*, *1*(3), 299–341.
Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.
Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569.
Popper, M., & Lipshitz, R. (1998). Organizational learning mechanisms: A structural and cultural approach to organizational learning. *The Journal of Applied Behavioral Science*, *34* (2), 161–179.
Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891.
Sarasvathy, S. (2004). Constructing corridors to economic primitives. In Butler, J. (Ed.), *Opportunity identification and entrepreneurial behavior* (pp. 291–312). Greenwich: Information Age Publishing.
Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, *11*(4), 448–469.
Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25*(1), 217–226.
Short, J. C., Ketchen, D. J., Jr, Shook, C. L., & Ireland, R. D. (2010). The concept of "opportunity" in entrepreneurship research: Past accomplishments and future challenges. *Journal of Management*, *36*(1), 40–65.
Sinkula, J. M., Baker, W. E., & Noordewier, T. (1997). A framework for market-based organizational learning: Linking values, knowledge, and behavior. *Journal of the Academy of Marketing Science*, *25*(4), 305.
Snihur, Y., Reiche, B. S., & Quintane, E. (2017). Sustaining actor engagement during the opportunity development process. *Strategic Entrepreneurship Journal*, *11*(1), 1–17.

Stevenson, H. H., & Jarillo, J. C. (1990). A paradigm of entrepreneurship: Entrepreneurial management*. *Strategic Management Journal*, *11*(1), 17–27.
Tocher, N., Oswald, S. L., & Hall, D. J. (2015). Proposing social resources as the fundamental catalyst toward opportunity creation. *Strategic Entrepreneurship Journal*, *9*(2), 119–135.
Tsai, W. P. (2002). Social structure of "coopetition" within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing. *Organization Science*, *13*(2), 179–190.
Turner, T., & Pennington, W. W. (2015). Organizational networks and the process of corporate entrepreneurship: How the motivation, opportunity, and ability to act affect firm knowledge, learning, and innovation. *Small Business Economics*, *45*(2), 447–463.
Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, *24*(2), 99–115.
Urban, B., & Wood, E. (2015). The importance of opportunity recognition behaviour and motivators of employees when engaged in corporate entrepreneurship. *Journal of Business Economics and Management*, *16*(5), 980–994.
Vaghely, I. P., & Julien, P. A. (2010). Are opportunities recognized or constructed? An information perspective on entrepreneurial opportunity identification. *Journal of Business Venturing*, *25*(1), 73–86.
Valaei, N., Rezaei, S., & Ismail, W. K. W. (2017). Examining learning strategies, creativity, and innovation at SMEs using fuzzy set qualitative comparative analysis and PLS path modeling. *Journal of Business Research*, *70*, 224–233.
Vandor, P., & Franke, N. (2016). See Paris and … found a business? The impact of cross-cultural experience on opportunity recognition capabilities. *Journal of Business Venturing*, *31*(4), 388–407.
Vendelo, M. T. (2009). Improvisation and learning in organizations-An opportunity for future empirical research. *Management Learning*, *40*(4), 449–456.
Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, *3*(1), 119–138.
Vera, D., & Crossan, M. (2004). Theatrical improvisation: Lessons for organizations. *Organization Studies*, *25*(5), 727–749.
Vera, D., & Crossan, M. (2005). Improvisation and innovative performance in teams. *Organization Science*, *16*(3), 203–224.
Vera, D., Nemanich, L., Vélez-Castrillón, S., & Werner, S. (2016). Knowledge-based and contextual factors associated with R&D teams' improvisation capability. *Journal of Management*, *42*(7), 1874–1903.
Weick, K. E. (1979). *The social psychology of organizing*. New York, NY: McGraw-Hill, Inc.
Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage Publications.
Wood, M. S., & McKinley, W. (2010). The production of entrepreneurial opportunity: A constructivist perspective. *Strategic Entrepreneurship Journal*, *4*(1), 66–84.
Wu, L., Liu, H., & Zhang, J. (2017). Bricolage effects on new-product development speed and creativity: The moderating role of technological turbulence. *Journal of Business Research*, *70*, 127–135.
Yiu, D. W., & Lau, C. M. (2008). Corporate entrepreneurship as resource capital configuration in emerging market firms. *Entrepreneurship Theory and Practice*, *32*(1), 37–57.
Zack, M. H. (2000). Jazz improvisation and organizing: Once more from the top. *Organization Science*, *11*(2), 227–234.
Zahra, S. A. (2008). The virtuous cycle of discovery and creation of entrepreneurial opportunities. *Strategic Entrepreneurship Journal*, *2*(3), 243–257.
Zaltman, G. (1979). Knowledge utilization as planned social change. *Knowledge*, *1*(1), 82–105.
Zhao, X., Lynch, J. G., Jr, & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197–206.
Zhou, K. Z., & Li, C. B. (2012). How knowledge affects radical innovation: Knowledge base, market knowledge acquisition, and internal knowledge sharing. *Strategic Management Journal*, *33*(9), 1090–1102.