

Employees' Entrepreneurial Orientation in Manufacturing Firms: An Empirical Study

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Abstract

This study aims to examine the relationship between organizational characteristics, knowledge management enablers, learning orientation, and employee entrepreneurial orientation (EO) among manufacturing industry employees in Klang Valley, Malaysia. The theoretical model based on the Resource-Based Theory approach to employee EO was developed. To answer the research questions, seven hypotheses were formulated. Self-administered questionnaires were distributed to the manufacturing industry employees. A total of 386 manufacturing employees of all levels were involved in this study, making an overall 25.73% response rate. This study utilized the Partial Least Squares Structural Equation Modelling to establish the validity and reliability of the measurement model and test the relationships. The findings of the study showed that both organizational characteristics and knowledge management enablers have significant influences on employee EO. The results indicated that learning orientation has a mediating role in the relationship between organizational characteristics toward employee EO, and knowledge management enablers toward employee EO. The findings offered several theoretical and practical implications to employees and policymakers. The limitations of the study are addressed and recommendations for future research work are also offered.

Key Words

Entrepreneurial Orientation, Organizational Characteristics, Knowledge Management Enabler, Learning Orientation, Malaysia

Introduction

The COVID-19 pandemic has also influenced entrepreneurial orientation (EO) among employees, both in terms of opportunity-based and necessity-based orientations. When examine opportunity-based EO among employees, the pandemic has presented new opportunities for employees to adopt an entrepreneurial mindset within their organizations or by starting their own ventures such as remote work and digital skills (Chandra & Mathur, 2021). The shift to remote work has allowed employees to explore new ways of working and develop digital skills. This has enabled them to identify opportunities within their organizations to streamline processes, innovate remote

collaboration methods and contribute to digital transformation efforts (Mutsuddi & Sinha, 2022.).

Moreover, entrepreneurship which faces uncertainty and changing market dynamics, employees have embraced entrepreneurship, which involves taking initiative and displaying an entrepreneurial mindset within

their existing roles. They seek out opportunities to improve efficiency, identify new markets or customer segments and propose innovative solutions (Jafri, 2018). These employees play a crucial role in driving innovation and fostering adaptability (Kanupriya, 2021).

However, when focusing on a necessity-based EO among employees, the pandemic's economic impact has also driven employees to adopt a necessity-based EO, leveraging their skills and resources in response to challenging circumstances such as job insecurity and redundancies (Agwanda et al., 2021). The pandemic has resulted in job losses and increased job insecurity. As a result, some employees have been motivated to become self-employed or start their own businesses as a means of generating income and achieving financial stability (Beltrán-Martín & Bou-Llusar, 2018).

Overall, the pandemic has prompted employees to adopt EOs, whether driven by identifying new opportunities or responding to necessity. This has resulted in increased innovation, adaptability and entrepreneurship within organizations and the broader workforce.

The notion of fostering greater EO, or a firm's propensity for taking risks, innovating and acting proactively (Covin, 1991; Miller, 1983), has gained considerable traction in the management literature (Kraus et al., 2019). The consensus emerging, as evident in two meta-analysis studies (Rauch et al., 2009; Saeed et al., 2014), is that renewal and change associated with EO have a positive effect on firm performance, predominantly by facilitating the firm's market and customer orientation (Andersén, 2017). The EO performance nexus has, however, been dominated by a focus on organizational or corporate EO (Covin & Wales, 2019). Despite the utility of this knowledge, we know considerably less about the dynamics related to intra- or employee EO, and yet this knowledge is also vital if we are to fully leverage EO within organizations (Antoncic & Hisrich, 2003; Suleiman Awwad & Kada Ali., 2012).

In contrast to the top-down focus on corporate EO, employee EO reflects a bottom-up approach and seeks to understand how and why individual employees engage in enhancing their entrepreneurial skill sets and capital (Sharma & Chrisman, 1999). Despite this bottom-up foundation of employee EO, intrapreneurs nevertheless remain within the parameters of firm-level boundaries and therefore can be viewed as betwixt between corporate and independent entrepreneurs in terms of characteristics, antecedents and outcomes. As a consequence, we would expect intrapreneurs to be influenced by a combination of both organizational and individual-level dynamic capabilities.

Moreover, while the literature has focused on both service and manufacturing contexts (Rauch et al., 2009; Saeed et al., 2014), the focus on employee EO remains predominantly within service contexts. Our study examines, therefore, the dynamics of employee EO within the context of manufacturing firms. Indeed, Liao and Subramony (2008) specifically call for shifting the predominant focus of employee EO studies from service contexts to also encapsulate manufacturing firms. Our focus on manufacturing firms, therefore, reflects a recognition of their co-dependency on customer orientation, a logic traditionally associated with service-based firms (Liao & Subramony, 2008). Not unlike service firms, incorporating a customer-focused orientation is also essential for manufacturing organizations (Bowen et al., 1989; Fornasiero & Carpanzano, 2017; Lengnick-Hall, 1996). Moreover, there exists greater cross-functionality in manufacturing firm employees due to the need to manage 'different functional roles' in relation to both 'producing high-quality products and services' (Liao & Subramony, 2008, p. 219). Therefore, while employees at the customer interface, as typical of service contexts, may exhibit higher customer orientation, employees in manufacturing firms with a customer-focused strategy may exhibit higher levels of employee-customer orientation across different functional roles. A complex interplay of activities is expected, ranging from those related to product augmentation to incorporating customer focus into the business strategy, requiring manufacturing firms to improve their employee EO (Lengnick-Hall, 1996). A burgeoning stream of studies has explored the dynamics of employee EO within manufacturing firms, and yet important gaps in our knowledge remain, especially in relation to the much richer body of studies on EO.

First, the effects of organizational characteristics and knowledge management enablers on EO are well-documented (e.g., Abualoush et al., 2018; Janssen, 2000; Lee & Choi, 2003; von Krogh et al., 2011), and yet our understanding of this dual effect on employee EO remains lacking. The predominant focus on EO has highlighted the importance of dynamic capabilities and knowledge management, and understanding is useful for strategically orientating firms at the corporate or organizational level. However, employee EO requires managing employees, as opposed to the senior managerial and corporate layers of focus investigated in EO studies. Given the boundary conditions of employees, however, we would expect both organizational characteristics and knowledge management to also play a role in employee EO.

Second, several studies have also positioned learning orientation as an essential driver of EO (e.g., Anderson & Kilduff, 2009; Kreiser, 2011; Mantok et al., 2019; Wang, 2008). While some of these studies have also emerged to map this correlation in manufacturing contexts (e.g., Hakala, 2013; Mahmood & Hanafi, 2013; Oktavio et al., 2019; Wolff et al., 2015), validating the role of learning orientation in facilitating employee EO in the manufacturing context remains unexplored.

Third, by positioning learning orientation as a mediator between dynamic capabilities, knowledge management and employee EO, we add to the notion that employee EO develops along a trajectory of primary and secondary dynamic capabilities. In doing so, we contribute to understanding how employee EO consists of both primary dynamic capabilities, or organizational characteristics, knowledge management enablers, and secondary dynamic capabilities (learning orientation). Since learning is a fundamental corollary to both the domains of dynamic capabilities and knowledge management (Crossan et al., 1999; Easterby-Smith & Prieto, 2008), investigating learning orientation has become increasingly conceptualized in facilitating EO. Although this primary-secondary dynamic capability pathway is widely recognized within the domain of EO, its validation in the development of employee EO remains relatively unexplored.

Fourth, by adopting a Malaysian context for our study, we contribute to shifting the predominant foci from Western-centric contexts to emergent managerial economies. Numerous scholars have advocated the need to shift the predominant Western-centric exploration of EO to different cultural contexts, especially in emerging economies (e.g., Blankson & Cheng, 2005; Rauch et al., 2009; Soinenen et al., 2013). Despite this need, our understanding of both EO and employee EO in developing and emergent economies remains relatively underexplored (Buli, 2017).

The remainder of our study is structured as follows. In the subsequent section, we review the broader construct of EO before digressing into employee EO in more depth. Next, we develop a series of hypotheses and a conceptual model to reflect the inter-relationships between organizational characteristics, knowledge enablers, learning orientation and employee EO. Then we outline our quantitative methodology and fourth present our findings. Finally, we discuss our findings, revisit our contribution to theory, provide managerial implications, and suggest some tentative areas for further research.

Literature Review

Entrepreneurial Versus Entrepreneurial Employee Orientation

Originating from strategic choice theory (Child, 1972), EO (EO), or its synonyms intrapreneurship and corporate orientation (Kraus et al., 2019), measures the degree of entrepreneurial behaviour in strategy making (Miller, 1983). EO has received significant scholarly attention as one of the most central concepts in the domain of entrepreneurship (Rauch et al., 2009, p. 762). At its core, EO encompasses all processes that enable organizations to make greater entrepreneurial decisions and take actions or create something new within an existing organization (Lumpkin & Dess, 1996). Most conceptualizations of EO are based on Miller (1983) formulation of a firm's innovativeness, proactiveness and risk-taking as the essential processes, practices and decision-making activities that lead to new market entry (Lumpkin & Dess, 1996, p. 136). Lumpkin and Dess (1996) also added competitive aggressiveness and autonomy as two additional factors contributing to Miller

(1983) original formulation of EO. Firms with higher EO will try to identify and exploit new market opportunities (Cho & Lee, 2018). The renewal and revitalization accompanying the identification and exploitation of organizational opportunities lead to greater firm performance (e.g., Corbett et al., 2021; Keh et al., 2007; Kollmann et al., 2007; Luu, 2017; Rauch et al., 2009; Saeed et al., 2014; Wu et al., 2008; Yoon & Solomon, 2017).

Measuring EO has often focused on the upper-echelon theory (Kraus et al., 2019), which suggests that organizational outcomes reflect the characteristics of top-level management teams (Hambrick & Mason, 1984). The views of CEOs are typically used to measure the view of the entire organization in EO scales (e.g., Covin & Slevin, 1989). Original formulations of employee EO (Bolton & Lane, 2012) also assumed this position when measuring the individual EO of employees as reflective of the view of senior management. Typically, a series of organizational characteristics are measured based on the managerial view of the firm's entrepreneurial strategic posture and environmental hostility (i.e., its commitment to risk-taking, innovativeness and proactiveness), as well as organizational structure and hostility (i.e., organic or agile versus mechanistic and rigid structures). However, Kraus et al. (2019) note that a purely organizational characteristics notion is problematic for several reasons. First, it obscures the possibility that EO might exist at different levels within the organization. Second, it might be adopted elsewhere in the organization, particularly by frontline staff. Third, it adopts a reductionist approach that overlooks the importance of other employees in generating innovation, enabling intrapreneurial behaviours and ultimately performance, which departs from top-down organizational characteristics. As Mustafa et al. (2018, p. 289) affirm, 'entrepreneurial activity can happen at all levels throughout the organization and may also occur through the self-initiated activities of individuals performed with or without organizational permission'. Therefore, employee EO assumes an intrapreneurial position as it diffuses across and within an organization, as opposed to a purely corporate top-down perspective (Sharma & Chrisman, 1999; Singh & Onahring, 2019). Indeed, an emergent consensus in Employees' entrepreneurial orientation (EEO) studies appears to be that both organizational and individual self-determined employee behaviours are necessary to foster intrapreneurship (e.g., Kraus et al., 2019; Mustafa et al., 2018; Sharma & Chrisman, 1999). This bottom-up approach to employee EO is central to differentiating it from its parent concept of EO, as well as the need for a more skills capability mindset in its conceptualization.

Interestingly, the relationship marketing and human relations perspectives on employee EO have traditionally recognized the centrality of employees in intrapreneurial activity, acknowledging that if management wants its employees to do a great job with customers, they must be prepared to do a great job for its employees (George, 1990). Therefore, at its core, employee EO treats employees as active partners in intrapreneurial engagement within the firm (Mohr-Jackson, 1991; Park et al., 2018). In marketing, for instance, the prescription of employee orientation is based on treating employees as 'internal customers' who need to be serviced before they can successfully accommodate external customer needs (Berry, 1981; Gronroos, 1981; Hauser et al., 1996). Employee EO is viewed as a central component of customer relationship management (CRM). As Day (2002, p. 2) suggests, excellence in CRM is not only about engaging customers but also about employee engagement to the point where 'employees are the most critical component of the CRM process' (Plakoyiannaki et al., 2008, p. 269). Therefore, while organizational attitude and associated characteristics may provide a guiding framework for intrapreneurship, the firm's potential for EO may go unrealized 'unless employees themselves exhibit intrapreneurial behavior' (Kraus et al., 2019, p. 6). As a result, a combination of organizational and knowledge-enabling characteristics has been proposed as preceding an employee EO conducive to organizational culture (Plakoyiannaki et al., 2008). Key to organizational culture is fostering and facilitating 'learning to cope with its [the firm's] problems of external adaptation and internal integration' (Schein, 1992, p. 3).

As Kraus et al. (2019) elaborate top-down commitment to strategic posture through innovativeness, risk-taking and proactiveness ultimately needs to be empowered by employee behaviours, not just attitudes. While organizational characteristics provide avenues for exploring new ideas, their exploitation on the ground demands

a process of self-renewal and learning (Antoncic & Hisrich, 2001). For example, in risk-taking, exploitative behaviours do not carry the risk of challenging organizational norms, but explorative risk-taking may necessitate personal risk and predispose employees to challenge norms and reduce organizational structural bureaucracy, thus crossing the border of the organization's strategy and culture (Kraus et al., 2019, p. 6). A similar case can be made for proactiveness. If early detection of new opportunities is mandated by organizational culture, then employees need to be empowered to go beyond existing boundaries and leverage their knowledge to seek new solutions (ibid, p. 7). Moreover, 'proactive behaviors of employees can be regarded as trying to improve internal organizational systems and processes or the fit between the organization and its external environment' (Mustafa et al., 2018, p. 303). In terms of innovation, employees may engage in improving existing workplace top-down innovative structures to help others and themselves behave more entrepreneurially (Sieger et al., 2013), and it may involve employees 'taking personal risks to bypass authority and act independently' (Mustafa et al., 2018, p. 314). We position this dual role of dynamic capabilities provided by organizational characteristics and their transformation into knowledge-enabling resources for employees as the theoretical underpinning and basis of our conceptualization.

Dynamics Capabilities and Knowledge Management

The dynamic capabilities approach can be understood as the ability to manage internal and external competencies to address changing environmental challenges (Teece et al., 1997). Knowledge management, at its core, leverages knowledge for firms to compete better (Alavi & Leidner, 2001). The need to merge dynamic capabilities and knowledge arose from recognizing their differentiating and overlapping features (Easterby-Smith & Prieto, 2008). The role of learning as a knowledge enabler is particularly critical in incrementally developing dynamic capabilities (Eisenhardt & Martin, 2000; Ghouri et al., 2023; Winter, 2003). Another reason for fusing knowledge management with dynamic capabilities is the understanding that resources are processes in flux, which can evolve from dynamic capabilities as a first-order capability to learning as a second-order capability (Collis, 1994; Winter, 2003). Both terms are used to describe how to best manage organizations in dynamic and discontinuous environments (Easterby-Smith & Prieto, 2008) and within intrapreneurship (Mustafa et al., 2018). In fact, Mustafa et al. (2018, p. 321) suggest that 'providing learning and development opportunities is extremely important' for fostering intrapreneurship. While dynamic capabilities emphasize the renewal of resources into new capabilities and competencies, knowledge management is often presented as a precondition for this process to occur. Knowledge is considered central in understanding organizations as learning systems (Nevis et al., 1995; Yadav et al., 2020) and equipping organizations with agility in uncertain environments (Ashrafi et al., 2019). Efficient knowledge management is deemed critical to transforming organizational strategy into success (Grant, 1996; Ipe, 2003).

Scholars from both schools of thought acknowledge the facilitating role of each other in enhancing their respective roles (e.g., Eisenhardt & Martin, 2000; He & Wong, 2004; Sambamurthy & Subramani, 2005). Similarly, the intrapreneurship literature notes the necessity of this duality, whereby senior leaders have a role in supporting employees' development of entrepreneurial behaviours through a culture characterized by trust, empowerment and experimentation (Mustafa et al., 2018). In summary, learning underpins both dynamic capabilities and knowledge management (Crossan et al., 1999; Easterby-Smith & Prieto, 2008). Despite this fusion and the conceptualizations that support such a nexus within employee EO (e.g., Mustafa et al., 2018), few studies have empirically examined the dual role of both dynamic capabilities and knowledge enablers, with learning as a mediator, on employee EO. We address this gap by developing a series of hypotheses to map the relationships between organizational characteristics, knowledge enablers, learning orientation and employee EO.

We present our conceptual framework in Figure 1. Our three sets of antecedents on employees' EO include learning orientation as a direct antecedent, and organizational characteristics and knowledge management enablers as indirect antecedents. Learning orientation, therefore, serves as a mediator between organizational characteristics and knowledge management.

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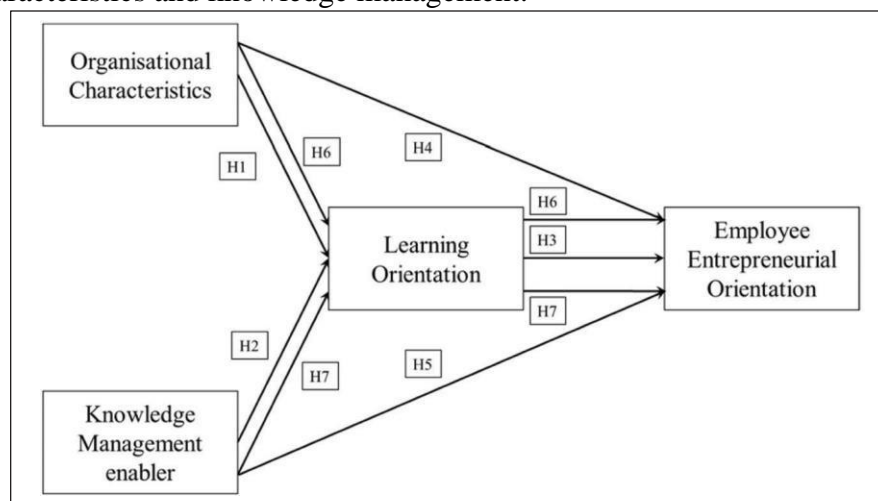


Figure 1. Conceptual Framework.

Learning Orientation

Learning orientation refers to ‘a concern for, and dedication to, developing one’s competence’ ([Gong et al., 2009](#), p. 765), reflecting an internal mindset that motivates individuals in the pursuit of building their skills and knowledge ([Dweck, 2000](#); [Lyons & Bandura, 2020](#)). Learning orientation not only predisposes individuals to acquire new knowledge but also challenges old paradigms ([Alegre & Chiva, 2013](#); [Sinkula et al., 1997](#)). It fosters greater creativity ([Weisberg, 1999](#)), openness to skills and knowledge ([Kozlowski et al., 2001](#)), cross-cultural adjustment ([Gong & Fan, 2006](#)), shared vision and knowledge ([Calantone et al., 2002](#)), and promotes continuous learning and training ([Huang & Wang, 2011](#); [Li & Tsai, 2020](#)), thus directly impacting the development of entrepreneurial employee orientation ([Mustafa et al., 2018](#)).

Although most studies on learning orientation focus on its relationship with EO, there are notable exceptions such as the work of [Mustafa et al. \(2018\)](#) that offer important insights. Several studies have validated the mediating role of learning orientation in the relationship between EO and performance. For example, [Wang \(2008\)](#) found that a firm’s EO organizational strategy positively influences learning orientation, which subsequently predicts performance. As a dynamic capability, organizational learning strategies shape a shared vision that influences the direction of learning and, consequently, learning orientation ([Kreiser, 2011](#)). [Hussain et al. \(2018\)](#) also found that learning orientation mediates the relationship between EO and performance. Firms with high EO engage in exploitative and acquisitive learning to achieve entrepreneurial outcomes ([Dess et al., 2011](#); [Khan et al., 2020](#); [Kreiser, 2011](#); [Li et al., 2009](#)) and exhibit greater explorative learning to engage in experimentation ([Kollmann & Stöckmann, 2014](#); [Kreiser, 2011](#); [March, 1991](#)).

However, in order to translate organizational learning strategies into behavioural actions and increase employees’ self-efficacy, it is important to transform organizational learning characteristics into employee development opportunities. According to [Mustafa et al. \(2018\)](#), this can be achieved through knowledge enablers such as providing training, simulations, feedback and opportunities that allow the development of entrepreneurial skills and competencies. Knowledge enablers enable employees to observe and imitate others, enhancing their ability to perform certain tasks and increasing their entrepreneurial self-efficacy. Since entrepreneurial self-efficacy depends on skill acquisition and feedback on their application, knowledge enablers designed to increase entrepreneurial self-efficacy also increase employee learning orientation and mediate the effects on employee EO. Knowledge management has been recognized as a key enabler of organizational learning ([Crossan et al., 1999](#); [Lee & Kim, 2002](#); [Ndlela & Du Toit, 2001](#); [Yadav et al., 2020](#)). While [Mustafa et al. \(2018\)](#) conceptualize

the possibility of knowledge enablers affecting employee EO through facilitating learning, the validation of this path remains unexplored. Furthermore, while the EO-learning orientation relationship and its connection to organizational characteristics and strategic perspective have been validated in numerous manufacturing-based contexts, the relationship of this nexus to employee EO remains invalidated. Therefore, we hypothesize that:

- H₁:** Organizational characteristics have a positive and direct influence on learning orientation.
- H₂:** Knowledge management enablers have a positive and direct influence on learning orientation.
- H₃:** Learning orientation has a positive and direct influence on employee EO.
- H₄:** Learning orientation positively mediates the effects of (H₄¹) organizational characteristics and (H₄²) knowledge enablers on employee EO.

While the previous set of hypotheses place emphasis on the mediating role of learning orientation, we also posit that organizational characteristics and knowledge enablers can have direct effects on employee EO. We review the justification for this position subsequently.

Knowledge Management Enablers

Knowledge management enablers have become one of the most widely discussed topics in the knowledge management literature ([Gold et al., 2001](#); [Lim et al., 2017](#); [Tooranloo et al., 2018](#)). However, the literature on knowledge management enablers continues to expand, with some advocating for a single factor ([Pentland, 1995](#)) and others suggesting as many as ten ([Nevis et al., 1995](#)). As noted by Baskaran (2018, p. 3), ‘there are no common or generic sets of knowledge management enablers’, but attempts have been made to systematically classify them. For instance, Gold et al. (2001) differentiated between cultural, organizational and structural (technological) knowledge management enablers, a view that has gained growing consensus in the literature on knowledge enablers ([Baskaran, 2018](#)).

Since the goal of entrepreneurship is to bring something ‘new’ to the market, with much of the novelty stemming from the unique combination of existing knowledge and new knowledge, firms should identify and acquire specialized knowledge to enhance their competitive advantage. Firms should convert all external knowledge into organizational knowledge, which can then be applied to innovation. This suggests that entrepreneurial organizations can improve their capabilities for developing new products or processes by leveraging available knowledge enablers. The versatility of knowledge enablers allows for direct effects on entrepreneurial employee orientation.

For example, De Clercq et al. (2013) validate how knowledge enablers can increase EO by facilitating social capital, which refers to mutual trust among colleagues and a predisposition toward entrepreneurial attitudes and behaviours. Second, if knowledge enablers further enhance goal congruence with the firm’s overall strategic goals, that is, its organizational characteristics, employees may be more willing to ‘subordinate their personal preferences to the collective organizational good, even if it might come at the expense of personal privileges’ ([De Clercq et al., 2013](#), p. 508). According to Baskaran (2018), knowledge enablers such as technological capital can improve communication efficiency and support the motivation of employees to maintain momentum. Both [De Clercq et al. \(2013\)](#) and [Baskaran \(2018\)](#), along with others (e.g., [Cohen & Prusak, 2001](#); [Von Krogh, 1998](#)), emphasize the utility of knowledge enablers in fostering trust and mutual faith in collective and individual decision-making processes for the purpose of EO. Indeed, the direct effects of knowledge enablers on employee EO have been validated in SMEs ([Matin et al., 2013](#)). These findings provide support for the direct effect of knowledge enablers on employee EO based on a cross-firm sample of manufacturing employees. Therefore, we hypothesize:

- H₅:** There is a significant relationship between knowledge management enablers and employee EO.

Organizational Characteristics

Organizational characteristics refer to an organization's efforts to facilitate and promote entrepreneurial behaviour and activities by providing the required resources. The majority of research on EO focuses on organizational characteristics that encourage EO attitudes, reflecting senior managerial mindsets. While various organizational characteristics have been identified in the literature, the formulation by Covin and Slevin (1989) remains the most pervasive, emphasizing a firm's strategic EO towards innovativeness, proactiveness and risk-taking. Numerous studies have explored the relationship between different organizational characteristics and EO (e.g., Chandler et al., 2000; Medase, 2020; Shepherd & Patzelt, 2018; Tur-Porcar et al., 2018; Witt, 2007).

Organizational characteristics based on EO can be translated into organizational entrepreneurial values, artifacts, assumptions and beliefs, which, in turn, can directly affect employee EO (Conduit & Mavondo, 2001).

Assumptions refer to taken-for-granted beliefs or what Schein (1981) referred to as the 'right things to do'. An underlying employee orientation assumption is that 'organizational members are expected to be supportive of each other and interested in fulfilling each other's needs' (Plakoyiannaki et al., 2008, p. 272). Values represent desirable principles, goals, philosophies and standards that characterize how employees should behave toward each other (van Rekom et al., 2006). Values are concerned with promoting 'people concern' (Maignan et al., 1999) and, for instance, advocate the use of mutual trust and empowerment (Beatty, 1988; Dobni et al., 2000; Wang & Chang, 2019). Behaviours encompass the actions, routines and responses expected from employees in response to environmental stimuli, serving as the interface between the organization and the marketplace (Amponsah-Tawiah et al., 2020; Bangwal et al., 2023; Narver & Slater, 1990). Continuous training and development, for example, are deemed important behaviours that ensure employees embody the values and assumptions of organizational culture (Susomrith et al., 2019; Varey & Lewis, 1999). Finally, artifacts encompass the material and non-material symbolism within an organization, such as dress codes, office arrangements, rituals, stories, codes of practice, corporate branding and more, which serve to reinforce the underlying assumptions, values and behaviours (Schein, 1992; Trice & Beyer, 1984). Clearly, a variety of factors can influence the development of employee orientation. Collectively, these value systems can converge to foster employee EO (Plakoyiannaki et al., 2008). While some of these factors, such as values and assumptions, may need to be translated into knowledge enablers, artifacts and behaviours, for instance, may have a direct effect on conditioning employees toward organizational goal congruence and an EO. Therefore, we hypothesize that:

H₆: There is a significant relationship between organizational characteristics and employee EO.

Materials and Methods

The primary units of analysis of the study were the employees of manufacturing industries at Klang Valley, Malaysia. The researcher selected this area because of the area is one of the manufacturing hot spots in Malaysia. Five-point Likert-based scales for EO-based organizational characteristics were adapted from Covin and Slevin (1989), knowledge enablers from Lee and Choi (2003), learning orientation from Sinkula et al. (2001) and finally, employee EO from Baskaran (2018). The questionnaire items were evaluated using a 5-point Likert-type scale, where 1 = strongly disagree and 5 = strongly agree. In order to collect data, the researcher sought for research permit as required by human resources in manufacturing. Eight independent manufacturing practitioners and three independent academics were used for minor modifications of scale adaptations and a pilot pre-test was conducted with 41 employees. The questionnaire was also prepared in English and Malay language as well. An e-survey was sent to the managing directors of 50 manufacturing firms within the Klang Valley sector of Kuala Lumpur by purposive sampling method because by selecting participants purposefully, researchers can ensure that the collected data is rich, diverse and provides valuable insights into the research topic (Bougie & Sekaran, 2019). A total of 33 directors responded affirming the distribution of the survey and number of staff distributed. Participation was agreed on the basis of no public disclosure of firm-identifiable specific data and second to share the final results as a summary report for participating firms. To control for non-biased responses, managing directors were instructed to distribute surveys on fixed data and subsequently to confirm the data of distribution

(e.g. Ghouri et al., 2021). All surveys were distributed on the pre-agreed data. A total of 1,597 surveys were distributed and a response rate of 25.73% was attained, amounting to 411 responses. A total of 25 surveys were deemed non-usable due to the minimal cut-off completion of the survey, leading to a final sample size of 386. Data analysis was conducted using SPSS, and specifically Partial Least Squares Structural Equation Modelling was used to analyse the data (Ghouri & Mani, 2019; Hair et al., 2019; Henseler et al., 2016). According to Hair et al. (2019) SmartPLS 3 software is used for data analysis because it is a powerful software tool commonly used for data analysis, particularly in the field of structural equation modelling. It offers several advantages that make it a preferred choice for researchers (Sarstedt & Cheah, 2019). First and foremost, SmartPLS provides a user-friendly interface that allows researchers to easily build complex models without extensive knowledge of statistical programming. It employs a partial least squares algorithm, which is particularly useful when dealing with small sample sizes, non-normal data, or complex models. SmartPLS also provides comprehensive statistical output, including path coefficients, bootstrapping estimates and goodness-of-fit measures, enabling researchers to assess the validity and significance of their models. Overall, SmartPLS streamlines the process of data analysis, making it accessible to researchers from various disciplines and enhancing the accuracy and reliability of their findings (Cheah et al., 2020).

Table 1 provides descriptive statistics of the sample:

Particular	Variables	Frequency	Percentage
Sex	Male	70	18.1
	Female	316	81.9
	Total	386	100
Age	20–30	189	49.0
	31–40	125	32.4
	41–50	73	16.3
	> 50	9	2.3
	Total	386	100
Work period	0–5 years	181	46.9
	6–10 years	55	14.2
	11–15 years	68	17.6
	16–20 years	41	10.6
	21–25 years	27	7.0
	> 25 years	14	3.6
	Total	386	100
Department	HR & Finance	5	1.3
	Import/Export & IT	2	0.5
	Store & Shipping	12	3.1
	T&D/ESH	3	0.8
	QA & CS	56	14.5
	Engineering	66	17.1
	Production	227	58.8
	Others	15	3.9
	Total	386	100
Academic	Master	6	1.6
	Degree	65	16.8
	Diploma	29	7.5
	Professional Cert.	21	5.4
	Certificate	185	47.9
	Others	80	20.7
	Total	386	100

Non-response Bias

The sample was subject to response bias evaluation, using Armstrong and Overton (1977) method to evaluate non-response bias by comparing results between early and late responses. A significant difference between early and late responses can substantially affect the generalisability of the results. Early (first quartile of respondents) and late respondents (fourth quartile of respondents) were coded using ‘day of arrival from sending the survey’. The mean number of days taken to reply to the survey was 4.6 days, reflecting a generally fast response rate, possibly due to being instructed to complete the surveys by managing directors. Both quartiles were compared

using the independent *t*-test across both dependent and independent variables, with no significant differences emerging in the means of variable responses. Moreover, we employed a common-method variance test guideline to avoid any variations caused by the instrument rather than respondent predispositions (e.g., Akhtar et al., 2022; Podsakoff et al., 2003). In addition, maximum likelihood estimation and a multiple indicator approach were used to minimize bias effects (Anderson & Gerbing, 1984, 1988).

As shown in Figure 2, the R² value emerging for employee EO is 0.752; which provides a strong level of support for our model. However, caution is also needed here, because supporting the validity of a model only with R² value is not entirely robust (Ghouri et al., 2020a; Hair et al., 2019). Given this, the Q² test was used to determine the validity of our structural model further. As a rule of thumb, if the predictive importance of latent exogenous constructs is greater than zero, then latent endogenous constructs are likely to be also important (Ghouri et al., 2020b; Hair et al., 2017). The Q² value of our model was 0.414 which supports our model's underlying assumption that an employees' EO has substantial predictive relevance, especially this is reduced by a Q² value of 0.234 when an alternative nested model is tested with learning orientation as a direct effect. Moreover, every construct was evaluated for potentially non-correlated significance. Our analysis shows that any collinearity error is not a concern within our study. Therefore, overall predictive relevance is obtained from our proposed structural model. Next, we will discuss the evaluation of the goodness of fit to further add validity to our model's robustness before discussing the hypothesized relationships.

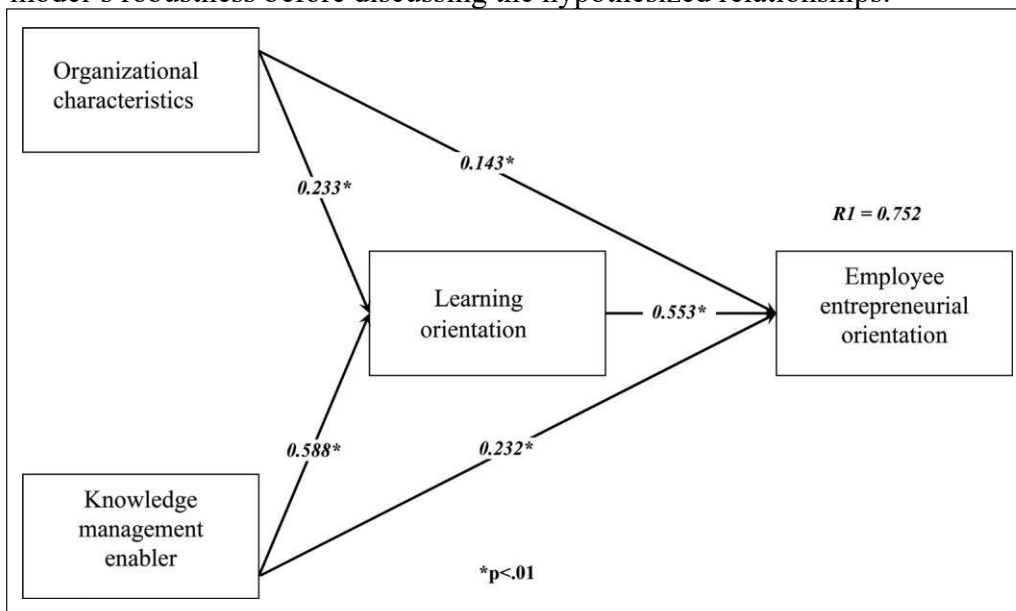


Figure 2. Findings of the Structural Model.

Figure 2. Findings of the Structural Model.

Goodness of Fit Analysis

In accordance with the guidelines established by Tenenhaus et al. (2005) and Henseler et al. (2016), we have calculated the Goodness of Fit (GoF) index for the model in this study. The goodness of fit is measured by the geometric mean value of the average root-mean-square communality score (AVE) values and the average R² values (for endogenous constructs), (GoF= $\sqrt{AVE \times R^2}$). Wetzels et al. (2009) reported the following cut-off values for assessing the results of the GoF analysis: GoFsmall = 0.1; GoFmedium = 0.25; GoFlarge = 0.36. Therefore, our conceptual model yields a GoF index value of 0.601, which indicates a very good (GoFlarge)

overall model fit. Alternative nested models were also normatively tested, namely with learning orientation also as a direct antecedent with organizational characteristics and knowledge enablers, but the model GoF was weaker than our conceptual version, further validating its validity.

Hypothesis 1 proposes there is a significant relationship between organizational characteristics and learning orientation and is supported since $\beta = 0.233$ ($p < .000$) with a t -value > 1.96 , with. Hypothesis 2, suggested that there is a significant relationship between knowledge management enablers and learning orientation and is also supported since $\beta = 0.588$ ($p < .000$) with a t -value > 1.96 . Hypothesis 3, which proposed a direct relationship between learning orientation and employee EO is also validated since $\beta = 0.588$ ($p < .000$) with a t -value > 1.96 . The latter was supported at t -value > 1.96 , with $\beta = 0.588$ and $\beta = 553$ ($p < .000$), respectively. Direct relationships between organizational characteristics and knowledge management enablers (Hypotheses 5 and 6) were also validated since $\beta = 0.143$ ($p < .000$) at a t -value > 1.96 and 0.143 with t -value > 1.96 respectively.

Hypothesis 4 proposed that learning orientation positively mediates the effects of (H_4^1) organizational characteristics and (H_4^2) knowledge enablers on employee EO. The result indicate that the organizational characteristics remain significant with employee EO after including learning orientation as a mediator, with $\beta = 0.129$ (indirect effect) and $\beta = 0.272$ (total effect) (organizational characteristics \rightarrow learning orientation \rightarrow employee EO mediation effect = 0.476), thus supporting H_4^1 Therefore, the effect of the organizational characteristics on employee EO can be explained through the mediating effects of learning orientation. However, given the low effect size, a partial mediation relationship is also verified. Hypothesis H_4^2 proposed the effects of knowledge management are mediated by learning supported, since the indirect effect size increases to $\beta = 0.325$ with a total effect of $\beta = 0.557$ but again with a low effect size at t -value > 1.96 , $\beta = 0.232$, and Cohen's $f^2 = 0.050$. A summarized overview of these findings is presented in Table 2.

Table 2. Summary of Hypothesis Assessment.

Hypothesized Path	p value	Decision
H_1 Organizational Characteristics \rightarrow Learning Orientation	.000	Supported
H_2 Knowledge Management Enablers \rightarrow Learning Orientation	.000	Supported
H_3 Learning Orientation \rightarrow Employees' Entrepreneurial Orientation	.000	Supported
H_{4_1} Organizational Characteristics \rightarrow Employees' Entrepreneurial Orientation	.000	Supported
H_{4_2} Knowledge Management Enablers \rightarrow Employees' Entrepreneurial Orientation	.000	Supported
H_5 Organizational Characteristics \rightarrow Employees' Entrepreneurial Orientation	.000	Supported
H_6 Knowledge Management Enablers \rightarrow Employees' Entrepreneurial Orientation	.000	Supported

In summary, and based on the analysis of measurement and structural models, it is concluded that both models are valid. This study shows that the proposed conceptual model is effective in explaining the original dynamics proposed within our hypothesis and thus the aims of the study. We discuss the implications of our findings subsequently.

Discussion and Implication

Employee EO is considered one of the critical success factors in the modern manufacturing industry, playing a significant role in its success. This argument holds true due to the intensified competitive nature of the manufacturing industry in recent years. To remain competitive and multi-skilled in both exploration and exploitation, companies increasingly rely on their employees' entrepreneurial skills. The goal of this study was to further understand employee EO in the manufacturing industry.

The findings of the study support all of the proposed hypotheses, indicating that employees' EO is influenced by knowledge management, organizational characteristics and learning orientation. Notably, learning orientation acts as a partial mediator between organizational characteristics and knowledge management. This study contributes to enhancing our understanding of employee EO by validating a scale designed to measure it in emergent economies and highlighting the success of a dual dynamic capability-knowledge management approach.

Furthermore, the findings demonstrate that organizational characteristics, knowledge management enablers and learning orientation within a manufacturing context enhance employees' EO. Managers should not underestimate the role of time for learning orientation to foster the effects of dynamic capabilities and knowledge management enablers. It is important to note that the direct effects of both knowledge enablers and organizational characteristics on learning orientation were substantially higher than their direct effects on employee EO.

The direct effects of learning orientation on employee EO were supported, along with its mediating role on knowledge enablers and organizational characteristics. These findings align with previous studies by Wolff et al. (2015) and Mahmood and Hanafi (2013) that emphasize the critical influence of learning orientation on employees' EO, particularly within an SME context.

Additionally, our findings corroborate existing studies within manufacturing contexts. For example, Baskaran (2017) reported that organizational characteristics, such as management support, stimulate employees' EO and foster positive word-of-mouth in the cement industry. Organizational characteristics not only offer financial rewards but also provide personal recognition for launching new initiatives and assuming new responsibilities, which in turn fosters learning orientation. The freedom to make decisions plays a crucial role in promoting and implementing ideas that can improve employees' EO through learning orientation.

Similar findings can be observed for knowledge management enablers, which have a strong total effect, further pronounced when considering learning orientation. Baskaran (2018) also found a positive effect of knowledge management enablers on employee EO.

Leveraging current organizational knowledge and innovation, coupled with the experiential effect of learning orientation, can activate organizational objectives and improve future initiatives.

This study holds implications for the manufacturing and enforcement industries, as well as policymakers and practitioners.

Practical Implications

The findings from this study suggest that pre-existing organizational characteristics in manufacturing industries should be considered to foster employee EO and promote innovation. Therefore, this study is relevant for policymakers and practitioners who are seeking to foster new innovation within the manufacturing context. While tangible benefits, which yield a financial return, are important to consider, managers should also pay heightened attention to intangible benefits that may require process improvements, idea sharing, brainstorming and incremental learning over time. The scarcity of studies examining the intangible or soft management aspects of fostering innovation within the manufacturing context indicates a missing link in strengthening employee entrepreneurial behaviours.

Organizations that aim to foster employees' EO need to support an organizational climate conducive to entrepreneurship while also implementing knowledge management enablers that enhance EO. Therefore, employee EO requires a combination of organizational characteristics or dynamic capabilities, as well as knowledge management. Additionally, to cultivate an entrepreneurial mindset among employees, it is essential for organizations to equip them with the necessary soft skills and secondary-level capabilities, such as learning orientation, to make the journey of entrepreneurial transformation achievable. Addressing existing competency gaps can be resolved by integrating appropriate measures to foster a learning culture within manufacturing contexts and establishing continuous skills development.

However, it is important for entrepreneurial reflection to begin at the top, as management plays an instrumental role in setting up the entrepreneurial climate within the organization. Our findings can be utilized by manufacturing firms to gain insights into the complexity of developing employees' EO, with a dual focus on implementing top-down organizational characteristics and cultural-level knowledge management enablers to create a knowledge-creating culture.

Theoretical Implications

Theoretical implications from this study have contributed to entrepreneurship theory by highlighting the importance of organizational characteristics, knowledge management enablers and learning orientation in the manufacturing sector, specifically within the context of Klang Valley. Critically, we validate the mediating role of learning orientation, as well as the dual effects of dynamic capabilities and knowledge management within the context of employee EO. This contribution addresses the scarcity of knowledge regarding the interrelationships between these key management constructs. Furthermore, the majority of

existing studies have been focused on Western and service-centric contexts. Therefore, our study extends this focus to emergent economies and the manufacturing context.

In summary, we provide a dual management model that incorporates dynamic capabilities and knowledge management, thus corroborating their compounded effect (Easterby-Smith & Prieto, 2008). The overlap between these constructs can be further enhanced by learning orientation, suggesting a long-term but more effective approach to cultivating employee EO.

Conclusion

Our findings demonstrate the efficacy of organizational characteristics, knowledge management enablers, and learning orientation on employee EO. This research has implications for various stakeholders, and we believe that a combined approach is necessary to foster the learning required for employees to develop the confidence and skillset to create new innovations. While this approach may take longer, it is ultimately more effective, as learning is a gradual process.

Implementing this pathway can have significant benefits for different stakeholders. First and foremost, employees themselves stand to gain from the development of an entrepreneurial mindset. By nurturing this mindset, organizations empower employees to become more innovative, enabling them to generate new ideas and solutions. This fosters a culture of continuous improvement, where employees actively seek out opportunities for growth and development. As a result, employees become more proactive in problem-solving and are more willing to take calculated risks, leading to personal and professional growth.

From a customer perspective, the impact of employee EO is positive. By encouraging employees to think creatively and develop new innovations, organizations are better equipped to meet customer needs and provide innovative solutions. This, in turn, leads to improved products and services, enhancing the overall customer experience.

Investors also benefit from an organization's focus on employee EO. By fostering innovation and encouraging employees to generate new ideas, organizations become more competitive and have a greater potential for growth. This can attract investors who are looking for opportunities with high growth potential and a culture of innovation.

Furthermore, the broader community can also experience positive outcomes from an organization's commitment to employee EO. By developing innovative products and services, organizations contribute to economic growth and job creation. This not only benefits the

organization itself but also has a positive ripple effect on the local community and economy.

In conclusion, nurturing an entrepreneurial mindset among employees has a wide range of benefits for various stakeholders in several ways. Employees experience personal and professional growth, customers benefit from innovative solutions, investors find attractive growth opportunities, and the broader community reaps the rewards of economic development and improved quality of life. Embracing employee EO creates a positive cycle that drives success and positive outcomes for all stakeholders involved. It fosters innovation, promotes proactive problem-solving and encourages calculated risk-taking. By embracing

this approach, organizations can create a culture of continuous improvement and drive positive outcomes for customers, investors, employees and the broader community.

Limitations and Future Research

The limitations of our data collection are clarified, and proposals are made for improving data collection. This analysis was cross-sectional in nature and only used a one-off survey that captured data from a single moment in time. In order to further analyse the impact of the testing factors, steps should be taken over the span of three to five years to examine longitudinal data. This could allow us to validate the direct effects of employee EO using actual performance metrics, as well as further validate the conceptualization we propose.

The present research also relies on a purely positivist approach. Therefore, specific nuances within the manufacturing sector may require further exploration using a pre-qualitative phase. The aim of the research was to examine the influence of organizational characteristics, knowledge management enablers, and learning orientation on employees' EO in Southeast Asia. The analysis only covered production firms and omitted service companies such as UPS, DHL and FedEx, which offer transportation and logistics services. The paper focuses on a majority of Malaysian supply companies. Future researchers may recommend expanding the scope to include more countries from Asia, Africa, Europe and the Americas to improve the generalizability of findings to other forms of manufacturing contexts. A multi-pronged sampling approach could be considered for this purpose.

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