Information Overload and the Entrepreneurs’ Behaviour: Mediating Role of Entrepreneurial Self-Efficacy

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Abstract

Undoubtedly, the entrepreneur is the key to the initiation of the entrepreneurial process and firm performance. Since entrepreneurs vary in their background and abilities, researchers have examined the factors impacting their performance. Previous results show that personality characteristics and self-efficacy of entrepreneurs had a positive impact on their performance. In this study, we consider that entrepreneurs’ self-efficacy (ESE) is a multi-dimensional concept and identify six inherent dimensions. Further, we include two other variables that have not received adequate attention in the literature so far, namely, entrepreneurial information overload (EIO) and entrepreneurs’ human resources management (HRM) behaviour. To undertake empirical analysis, we developed a conceptual framework that proposes a negative impact of entrepreneurial information overload on entrepreneurial self-efficacy and entrepreneurs’ HRM behaviour. Responses from 403 entrepreneurs of a large emerging economy were subjected to path-based multiple regression analysis. The results reveal that information overload has a direct impact on all the ESE dimensions, except on planning tasks. Although there is no direct effect of EIO on entrepreneurs’ HRM behaviour, there is an indirect effect through the mediating role of ESE. These results suggest the need for appropriate strategies to help entrepreneurs to deal with information overload and ways to improve specific dimensions of ESE as necessary. Further, this study provides a platform for empirical research for future studies.

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Introduction

The importance of entrepreneurship has long been recognised as critical in fuelling economic growth through innovation, new business ventures and wealth creation (Bradley & Klein, 2016; Vallieri & Peterson, 2009). In the entrepreneurship process, it is the entrepreneurs who play the central role in identifying a business opportunity, initiating a business idea, taking the risk and contributing towards firm performance (Kuratko & Hodgetts, 2007; Van Praag, 2005). Therefore, many studies have focused on entrepreneurs’ individual-level characteristics such as the big-five personality factors of entrepreneurs, need for achievement, locus of control and risk-taking propensity (e.g., Antoncic et al., 2015; Caliendo et al., 2014; Rauch & Frese, 2007; Zhao & Seibert, 2006). While Antoncic et al. (2015) found that the openness personality factor was related to start-ups, Caliendo et al. (2014) identified that agreeableness and locus of control influence entry and exit decisions of entrepreneurs. However, the entrepreneurs’ performance depends on how these personality characteristics interact with others. A meta-analytic study by Rauch and Frese (2007) show that entrepreneurial behaviour is influenced by personality characteristics such as innovativeness, need for achievement and generalised self-efficacy. Other studies showed that personality characteristics and entrepreneurial self-efficacy (ESE) have a positive impact on entrepreneurs’ performance (Antoncic et al., 2015; Forbes, 2005; Zhao & Seibert, 2006). But the behavioural aspects of entrepreneurs became the focus of attention as researchers tried to investigate what entrepreneurs actually do, that is, what behavioural activities they indulge in (e.g., Bird et al., 2012; Luthans & Ibraveya, 2006). The study by Luthans and Ibraveya (2006) identified eight different entrepreneurial behaviours, one of which is human resource management (HRM) behaviour. Prior research (e.g., Allen et al., 2013) has already pointed out the importance of HRM in enabling entrepreneurs to achieve higher organisational performance. In entrepreneurial firms, efficient management of human resource depends on the entrepreneurs’ ability and involvement in a range of areas such as the selection, training, socialisation, guiding and motivating the employees (Cardon & Stevens, 2004; Messersmith & Wales, 2011). Entrepreneurs, therefore, play a pivotal role in leading and allocating venture resources.

Given the uncertain and dynamic nature of the environment in which the entrepreneurs operate, they need to keep abreast of changes in environmental factors while making decisions. A factor that is increasingly becoming important and challenging for entrepreneurs is the volume of information and its exponential growth (Baron, 1998; De Carolis & Saparito, 2006; Roetzel, 2019). Researchers point out that increased volume of information hinders the ability of the managers in making optimal decisions (Roetzel, 2019; Van Knippenberg et al., 2015).
Consequently, entrepreneurs need to sift through vast amounts of information before making relevant decisions. The challenges that entrepreneurs face in dealing competently with the volume of information is referred to as entrepreneurial information overload (EIO). With the increase of information in the contemporary world, this problem escalates further and will adversely impact the entrepreneurs’ decision-making in different functional areas. Given the context of EIO, the entrepreneurs’ ability to manage human resources too becomes critical. Therefore, our study seeks to address the gap in the literature on how entrepreneurs deal with the information overload by examining the research question: ‘how does EIO impact the entrepreneurs’ HRM behaviour?’ We also seek to investigate the impact of EIO on ESE and the mediating role of ESE in the relationship between EIO and the entrepreneurs’ HRM behaviours.

Our study contributes to the literature in several ways. First, while prior research has examined several aspects of entrepreneurship, the impact of information overload on entrepreneurship is almost non-existent, except for perfunctory acknowledgements. To the best of our knowledge, our study is the first in this area. Second, we treated ESE as a multi-dimensional construct and developed relevant dimensions for empirical testing. Further, most of the entrepreneurship research is focused on developed or mature economies, which prompted Bruton et al. (2008) and Zahra (2007) to recommend the adaptation of entrepreneurial theories to emerging economies. This view received a strong endorsement recently from scholars working on emerging economies (Kumar et al., 2019; Meyer & Peng, 2016; Yiu et al., 2018). Accordingly, we focus on a large emerging economy, i.e., India, for this study.

**Literature Review**

At the centre of the entrepreneurial process is the entrepreneur, who recognises opportunities and brings about new business ideas and products to the marketplace. Given the critical role that the entrepreneur plays in venture creation and maintenance, understanding the factors that affect the entrepreneurs was investigated by different researchers (Antonicic et al., 2015; Bradley & Klein, 2016; Meyer & Peng, 2016; Roetzel, 2019). However, our literature review section focuses on three areas that are relevant to our study. First, a phenomenon that has become increasingly relevant to business managers is the concept of information overload, which was discussed in disciplines such as marketing, accounting, and management information systems as affecting the decision-makers (Roetzel, 2019). Yet its coverage in entrepreneurship is very limited. Second, it is known that entrepreneurs engage in certain behaviours, which were identified by observing the entrepreneurs behaviours (Luthans & Ibraveya, 2006). However, these behaviours have not been empirically examined. One of the identified behaviours is related to entrepreneurs’ HRM activities. As the new venture grows, its sustenance depends on the entrepreneurs’ ability to gather and utilise human resources for the business. Third, a central factor that impacts entrepreneurial success is their self-efficacy, which we refer to as entrepreneurial
self-efficacy (ESE), which has emerged as an important construct that influences entrepreneurs’ performance (Chen et al., 1998; Drnovšek et al., 2010). These three concepts, namely EIO, entrepreneurs’ HRM behaviour and ESE, are further expanded below.

**Entrepreneurial Information Overload**

The environments in which businesses operate today are more challenging due to, among others, the explosive growth of the amount of information. The increase in the volume of information could easily be related to the rapid developments in information and communication technology (ICT). In the past, business managers faced the problem of insufficiency of information when access to relevant information was limited or scarce. However, in the contemporary world of the information society, there is too much of information available to business managers even if they are not actively seeking it (Klausegger et al., 2007; Roetzel, 2019).

However, there is a downside to dealing with too much information. According to the Noble Prize laureate, Herbert Simon, ‘a wealth of information creates a poverty of attention’ (Simon, 1971, p. 40). He observed that the respondents’ ability to process and use the information and make decisions is limited by their cognitive processing capacity. The problem relating to managing vast information was also recognised by Milford and Perry (1977), who referred to it as ‘information overload’ (IO); they define IO as ‘the condition in which the amount of input into a system exceeds the processing capacity of that system’ (p. 131). Hence, modern businesses had to address the challenge of coping with too much information in the form of information overload (Roetzel, 2019; Shapiro & Varian, 1999).

Since the phenomenon of IO is relevant to all decision-making situations, it was examined in different business-related disciplines (Roetzel, 2019). For example, the concept was applied in the form of ‘salesperson’s information overload’ (Hunter, 2004; Hunter & Goebel, 2008) and ‘managerial information overload’ (Farhoomand & Drury 2002). Following the analogy, we refer to the concept of information overload in entrepreneurship as entrepreneurial information overload (EIO). Like other business managers, entrepreneurs also faced the challenge of EIO that leads them to less optimal decision outcomes as they sift through a massive amount of information to identify useful items. Entrepreneurs and small business owners/managers continuously scan and monitor their operating environment to look for new opportunities and also to strengthen their competitive position (Keh et al., 2007; Welsch & Young, 1982). These entrepreneurs are referred to as avid information-gatherers as they were found to actively search for more information (Kaish & Gilad, 1991, p. 49). This is not without reason. The process of venture creation begins with recognising an opportunity, which can arise only from the entrepreneur’s ability to stay alert and be in sync with the changes that occur in the market conditions (Kirzner, 1973; Shane, 2000). The information related capabilities are divided into two categories: information-gathering and information-processing (Sleptsov & Anand, 2008). The authors point out that firms fail to take advantage of the entrepreneurial opportunities both
when their information capabilities are lower or when there is an imbalance between the two types. The venture formation, in itself, is considered as a process of learning where the entrepreneurs have to overcome the liabilities of newness by using the information acquired by them (Cooper et al., 1995). Information is a critical resource that entrepreneurs use at various stages in new venture creation and growth. In an exploratory study, Mueller et al. (2012) found that entrepreneurs in the start-up stage spend approximately 36 per cent of their time in exchanging information and opinions, and the growth entrepreneurs spend 54 per cent of their time exchanging information and opinions. Thus, the success of a venture depends on the entrepreneur’s role, among others, of being a consummate information seeker, processor and assimilator. However, EIO is likely to impair entrepreneurs’ ability leading to less than optimal decision outcomes.

**Entrepreneurs’ HRM Behaviour**

As discussed earlier, entrepreneurs’ personal attributes and characteristics such as ESE, knowledge, motivation and intention are important for venture success. But, mere possessing those personal attributes and characteristics is not a sufficient guarantee for entrepreneurial success. Concrete action or deliberate behaviour is necessary by the entrepreneurs for a business venture to come to exist and survive or grow (Bird et al., 2012). According to Bird (1989), entrepreneurial behaviour can be defined as an ‘opportunistic, value-driven, value-adding, risk-accepting, creative activity where ideas take the form of organisational birth, growth or transformation’ (p. 5). This definition is later endorsed by Bird and Schjøedt (2009), who suggest that entrepreneurial behaviour is the concrete enactment of an individual or team tasks or activities required to start and grow a new organisation. It implies that there is a need for discrete units of action in the behaviour of entrepreneurs that can be observed by others in a meaningful way; activities that result in not only starting but also growing a new organisation.

Entrepreneurship scholars (Luthans & Ibrayeva, 2006; Mueller et al., 2012) have identified specific critical behaviours that explain successful entrepreneurship. An entrepreneurial behaviour that has been identified across several studies (Hayton, 2005; Rauch & Hatak, 2016) as being crucial for a long-term venture success is how the entrepreneurs manage human resources. Once the entrepreneurs start a venture, sooner or later, they will have to employ people to deal with sales growth, extended client base, or production rates (Cardon & Stevens, 2004; Schaper et al., 2014). It means acquiring and maintaining the right employees is of prime importance for entrepreneurs as it can have significant implications for the organisation’s survival. In the entrepreneurship context, Luthans and Ibrayeva have defined human resource management (HRM) as ‘the process of staffing the organisation with human resources and ensuring that the performance level of every employee is realised’ (2006, p. 106). Using unstructured observations, the authors found that entrepreneurs engaged frequently in HRM behaviours such as selecting employees, training employees, reinforcing employees, motivating employees and delegating to employees as activities. The list of tasks mentioned
here is comparable to a typical set of HRM functions. Hence, the ability of entrepreneurs’ HRM behaviour in aligning the HRM resources to achieve venture goals is critical for its performance.

**Entrepreneurial Self-Efficacy**

Another essential concept is entrepreneurial self-efficacy (ESE), which has been recognised as critical for entrepreneurial success (Boyd & Vozikis, 1994; Drnovšek et al., 2010; McGee et al., 2009). Its origins lie in the concept of self-efficacy proposed by Bandura, who defined it as ‘an individual’s belief in one’s capacity to organise and execute the courses of action required to produce given attainments’ (1977, p. 3). Other scholars (Chen et al., 1998; DeNoble et al., 1999; McGee et al., 2009) have adapted Bandura’s self-efficacy concept to an entrepreneurial field in the form of ESE. Chen et al. (1998, p. 295) refer to ESE ‘as the strength of a person’s belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship’. These roles and tasks of an entrepreneur are in the form of developing new product and market opportunities, building an innovative environment, initiating investor relationships, financial control, risk-taking and so on (e.g., Chen et al., 1998; DeNoble et al., 1999; Rauch & Frese, 2007). Other scholars (e.g., Zhao et al., 2005) have described self-efficacy as a motivation construct that influences peoples’ choices of activities and goals in a variety of tasks. Previous studies (Hallak et al., 2014; Rauch & Frese, 2007; Zhao et al., 2005) have used a single composite score to capture ESE impact. Since the entrepreneurs perform several roles, their self-efficacy should be related to each of those roles. Consequently, a single construct of self-efficacy would not be able to capture all the multiple dimensions relating to the entrepreneurial roles. Accordingly, Drnovšek et al. (2010) point out the limitations of how ESE has been conceptualised and underscores the need for identifying various dimensions within the ESE.

Recognising the need for a multi-dimensional approach to ESE, McGee et al. (2009) and Drnovšek et al. (2010) have identified few dimensions within ESE. But, McGee et al. (2009) focused on the value creation process, while Drnovšek et al. (2010) focused on entrepreneurial intentions, particularly on goals and control beliefs. We develop our construct measures based on McGee et al. (2009), who identified four ESE dimensions relating to the venture creation process model: (a) searching, (b) planning, (c) marshalling and (d) implementing. The searching dimension of ESE refers to the entrepreneurs’ ability to identify and develop a unique idea. The planning dimension relates to the entrepreneurs’ ability to forecast the demand and plan the operational aspects of making the opportunity into a viable business venture. Marshalling refers to the entrepreneurs’ ability to gather resources and support for the business idea. The entrepreneurs would also be concerned with growing and sustaining the business beyond its infancy. To do so, they require relevant implementation skills as business managers. Hence, McGee et al. (2009) identify two related but significantly different aspects of the implementation dimensions within ESE. One is related to managing
human resources, and the other is related to managing finance. Further, DeNoble et al. (1999) and Hallak et al. (2014) have pointed out that entrepreneurs should have the ability to cope with unexpected challenges in the environment of entrepreneurship. For an entrepreneur, each of the above dimensions of ESE is important and could be investigated for their varying degree of impact. Hence, we have shown all the six dimensions of ESE separately.

### Conceptual Model and Hypothesis

Based on the literature, we propose a conceptual model linking all the three constructs, namely EIO, ESE and entrepreneurs’ HRM behaviour (see Figure 1). While the ESE dimensions can contribute positively to a successful venture, EIO is posited to impede these ESE dimensions. We also look at the indirect effects of ESE on the association between EIO and entrepreneurs’ HRM behaviour. Accordingly, we have proposed a set of hypotheses based on these linkages.

The literature shows that entrepreneurs consciously engage in gathering information for decision-making, and for implementing their plans. However, when the information is available in abundance from multiple sources, it leads to information overload (Eppler & Mengis, 2004; Roetzel, 2019). As discussed earlier, when the volume of information available overwhelms the information processing capacity of an individual, it adversely affects the quality of their decision-making (Eppler & Mengis, 2004; Speier et al., 1999). An individual’s behaviour can be impacted by information overload both by omission, where the individual may fail to attend to relevant information or by error, where the information may be assimilated incorrectly (Vickery & Vickery, 1987). Information overload impacts adversely in other ways too; it makes individuals frequently suffer from cognitive strain and stress (Schick et al., 1990) and hinders timely decision-making (Bawden, 2001; Hemp, 2009; Speier et al., 1999).

![Figure 1. Role of EIO and ESE on Entrepreneurs’ HRM Behaviour](image)

**Source:** The authors.
In the entrepreneurship context, information overload is likely to impair the behaviour of entrepreneurs in decision-making and implementation. According to Bird et al. (2012), entrepreneurial behaviour consists of the observable actions (activities) and the responses that such activities evoke. Entrepreneurs require not only cognitive abilities to process complex information but also to act on them appropriately. But the research shows that entrepreneurs face challenges due to information overload and biases (Bawden, 2001; Speier et al., 1999; Zhang & Cueto, 2017). For example, Klausegger et al. (2007) pointed out that managers collected too much information which they were unable to use efficiently, and this negatively impacted on their task accomplishment. In line with this thinking, we believe that EIO can have a negative impact on the entrepreneurs’ HRM behavioural activities. Hence, the following hypothesis is proposed:

\[ H_1: \text{Entrepreneurial information overload is negatively associated with the entrepreneurs’ HRM behaviour.} \]

Within the entrepreneurship literature, the concept of ESE was found to play a significant role in the performance of the entrepreneur (Drnovšek et al., 2010; McGee et al., 2009). Research shows that entrepreneurs who have high ESE take up entrepreneurship as a career, and also successfully establish themselves in the business arena (Chen et al., 1998; McGee et al., 2009). To do so, entrepreneurs need to perform the tasks of opportunity seeking, venture creation and growth. The entrepreneurs have to have confidence in their ability in various aspects such as (a) search for new opportunities and design a relevant product, (b) undertake planning related tasks, (c) undertake marshalling or gathering of the necessary resources, (d) implement-people related tasks, (e) implement finance-related tasks and (f) cope with any unexpected challenges that might affect them (DeNoble et al., 1999; Hallak et al., 2014). It is argued that having the right amount of information helps in coping with uncertainty (Schick et al., 1990). On the other hand, an overwhelming amount of information reduces the effectiveness of decision making (Miller, 1972; Schick et al., 1990) and increases information anxiety (Bawden & Robinson, 2009). Such emotional arousal or physiological responses resulting from anxiety, stress or fear can negatively impact self-efficacy (Bandura, 1977; Conger & Kanungo, 1988; Hunter, 2004). Therefore, these negative implications of EIO can also have a detrimental impact on ESE. Accordingly, we offer the following set of hypotheses:

\[ H_2: \text{Entrepreneurial information overload (EIO) is negatively associated with each of the dimensions of entrepreneurial self-efficacy (ESE):} \]

(2a) searching
(2b) planning
(2c) marshalling
(2d) implementing people
(2e) implementing finance and
(2f) coping with unexpected challenges.
The role of an entrepreneur in managing human resources and other venture-related people is very critical (Peters, 2005). Several studies pointed out that information overload is likely to impact managers’ task accomplishment negatively (e.g., Klausegger et al., 2007; Van Knippenberg et al., 2015). Based on this notion, we have posited a negative effect of the EIO on entrepreneurs’ HRM behaviour. This negative relationship may be seen as a direct effect as we have already suggested in Hypothesis H1. Similarly, we also hypothesised a direct negative effect of EIO on ESE (H2a–f). However, we believe that EIO may also have an indirect impact on entrepreneurs’ HRM behaviour through a mediating role of ESE. The EIO may impact ESE adversely, which, in turn, may negatively impact the entrepreneurs’ HRM behaviour. Accordingly, we propose the following hypothesis that relates to the mediating role of ESE dimensions in the relationship between EIO and entrepreneurs’ HRM behaviour, as shown below:

\[ H_3: \] The relationship between entrepreneurial information overload and entrepreneurs’ HRM behaviour is negatively mediated by various dimensions of entrepreneurial self-efficacy indicated:

(3a) searching  
(3b) planning  
(3c) marshalling  
(3d) implementing people  
(3e) implementing finance and  
(3f) coping with unexpected challenges.

**Method**

The questionnaire was designed to measure and analyse the impact of EIO on entrepreneurs’ HRM behaviour and ESE. The constructs were measured using a Likert-type scale. The operationalisation of the constructs was done by adapting them from previous studies, as explained later. The EIO construct measured the effects of information overload on the entrepreneurs and the activities they undertake. The questions (seven items) were adapted from Hunter and Goebel (2008) by rewording the questions and making them relevant for our study. The entrepreneurs’ HRM behaviour construct measured the entrepreneur’s efficiency in undertaking human resources activities. The questions (five items) were adapted from Luthans and Ibraveya (2006) used in their study. ESE had six dimensions: searching, planning, marshalling, implementing-people related tasks, implementing-finance related tasks and coping with challenges, and these dimensions were incorporated using a 22-item scale. Of these, the first five were based on McGee et al. (2009), and the sixth dimension ‘coping with unexpected challenges’ was chosen from DeNoble et al. (1999).

The sample was drawn from practising entrepreneurs based in India. The questionnaires were distributed to owner-managers of medium, small and micro enterprises (MSME) in India who were members of Confederation of Indian
Industry (CII), or Rotary. The authors were based outside India, but they used personal contacts in different states to collect data that took place during 2013–14. In previous studies, those who owned and managed their business ventures were considered as entrepreneur (Caliendo et al., 2014; Stewart & Roth, 2001). We adopted the same behavioural definition of entrepreneurs. The states covered in our study included Gujarat, Karnataka, Maharashtra, New Delhi (NCR), Punjab, Tamil Nadu and Telangana. To some extent, the sample is spread across both northern and southern parts of India. The data was collected from 1,100 respondents. However, after screening, we had only 403 usable responses. The industry-wise breakup of the final sample is as follows: agriculture and allied activities (4.7 per cent), manufacturing and construction (12.9%), wholesale and retail (12.9%), telecommunication and utilities (16.1%), hospitality and tourism (12.2%), financial services (4%) and others (19.4%).

The content validity of the questionnaire was assessed by a group of academics and practising entrepreneurs in India and New Zealand. The exploratory factor analysis was used to determine the appropriate number of factors as well as the pattern of factor loadings. Scale reliability was checked using the internal consistency test and Cronbach Alpha. To test our hypotheses, regression-based path analysis using Hayes (2013) PROCESS tool for SPSS was used, because such type of regression-based path analysis considers the various conditions in combination.

**Measures**

As mentioned previously, entrepreneurs’ HRM behaviour was operationalised using the exemplars of the observed entrepreneurial behaviour in Luthans and Ibrayeva’s (2006) study. An additional question relating to the involvement of the entrepreneur in the selection of their employees was added, keeping in mind that this is a common activity undertaken by the owner or manager in a firm. Exploratory factor analysis results for the ‘HRM behaviour’ showed that, as hypothesised, the construct was unidimensional. All the five items loaded on this factor, and the factor loadings ranged from 0.66 to 0.86. The total variance explained by the five items of the ‘HRM behaviour’ construct is 54.99 per cent. The Cronbach Alpha value is 0.86.

To capture a clear and comprehensive view of EIO and its effect on the entrepreneur, the construct for this study was adapted from Hunter and Goebel (2008), who examined the impact of information overload on sales performance. Since their measures focused on the impact of information overload for salespeople, the items were reworded and adapted to the context of the entrepreneurship in the form of EIO using seven items. The construct of EIO measures the effect of information overload on the entrepreneurs and the activities they have to undertake. All the seven items loaded on this factor, and the factor loadings ranged from 0.48 to 0.80. The total variance explained by these seven items of ‘EIO’ construct is 49.89 per cent. The Cronbach Alpha value is 0.87.

The current study attempts to overcome the limitations of the previous research on self-efficacy of entrepreneurs (Hallak et al., 2014; Zhao et al., 2005). The self-
efficacy construct was mostly in the form of a unidimensional construct, which could not adequately capture the self-efficacy relating to different entrepreneurial activities. Hence, we use the framework of McGee et al. (2009) to develop and measure ESE, which included dimensions such as (a) searching, (b) planning, (c) marshalling, (d) implementing-people and (e) implementing-finance. Since the focus of this study is to examine practising owner-managers, another factor was added, that is, coping with unexpected challenges, as this was seen as being important in predicting entrepreneurial behaviour (see DeNoble et al., 1999). There were multiple items for each factor, as described below.

For searching, the Cronbach Alpha is 0.82, and the factor loadings ranged from 0.70 to 0.86. The total variance explained by the three items of the searching construct is 61.33 per cent. The Cronbach Alpha value is 0.87. Planning had three items loaded, and the factor loadings ranged from 0.65 to 0.77. The total variance explained by the three items of planning construct is 52.68 per cent. The Cronbach Alpha value is 0.77. For the factor of marshalling, the factor loadings ranged from 0.69 to 0.74. The total variance explained by the three items loaded on this factor is 50.84 per cent. The Cronbach Alpha is 0.76. For the implementing-people related tasks, there were six items loaded on this factor, and the factor loadings ranged from 0.67 to 0.80. The total variance explained by the six items being 51.73 per cent. The Cronbach Alpha is 0.86. For implementing-finance related tasks, four items were loaded on this factor, and the factor loadings ranged from 0.72 to 0.83. The total variance explained by the four items is 61.22 per cent. The Cronbach Alpha is 0.86. The ‘coping with unexpected challenges’ factor had three items loaded on it. The factor loadings ranged from 0.70 to 0.92. The total variance explained by the three items is 62 per cent. The Cronbach Alpha is 0.82.

Results

The results of the analysis are presented in Tables 1 and 2. Table 1 shows the results of the path analysis that examined the association between (a) EIO and entrepreneurs’ HRM behaviour (H1) and (b) EIO and the various dimensions of ESE (H2a–H2f). Table 2 presents the results of the indirect effect of EIO on entrepreneurs’ HRM behaviour through the multiple dimensions of ESE (H3a–H3f).

Direct Effects of EIO on Entrepreneurs’ HRM Behaviour and ESE

The results in Table 1 show that there is no direct relationship between EIO and the entrepreneurs’ HRM behaviour. As Table 1 shows, there was a negative beta coefficient ($\beta = -0.01$), but it was not significant. It means the H1 is not supported. Table 1 also shows that EIO has a significant direct effect on all the dimensions of ESE, except that of planning. All of them, apart from planning, have a negative beta coefficient (searching: $\beta = -0.16$, SE = 0.05, $p < .01$; marshalling: $\beta = -0.13$, SE = 0.05, $p < .01$; implementing-people related tasks: $\beta = -0.12$, SE = 0.04,
### Table 1. Results of the Analyses for Hypotheses H1 and H2

| IV ↓ / DV → | Searching | Planning | Marshalling | Implementing People | Implementing Finance | Coping with Challenges | Human Resource Management Behavior |
|-------------|-----------|----------|-------------|---------------------|----------------------|------------------------|-----------------------------------|
| IV: EIO     | –0.16**   | –0.08NS  | –0.13**     | –0.12**             | –0.12*               | –0.16**                | –0.01NS                          |
|             (0.05) | (0.05)    | (0.05)   | (0.04)      | (0.05)              | (0.05)               | (0.05)                  | (0.04)                           |
| M1: Search  | 0.11*     |          |             |                     |                     |                        |                                  |
|             (0.05) |          |          |             |                     |                     |                        |                                  |
| M2: Planning| 0.09NS    |          |             |                     |                     |                        |                                  |
|             (0.06) |          |          |             |                     |                     |                        |                                  |
| M3: Marshalling | –0.10† |          |             |                     |                     |                        |                                  |
|             (0.05) |          |          |             |                     |                     |                        |                                  |
| M4: Implementing people | 0.42*** |          |             |                     |                     |                        |                                  |
|             (0.06) |          |          |             |                     |                     |                        |                                  |
| M5: Implementing finance |          |          |             | 0.05NS              |                     |                        |                                  |
|             (0.05) |          |          |             |                     |                     |                        |                                  |
| M6: Coping with challenges |          |          |             |                     | 0.16*               |                        |                                  |
|             |          |          |             |                     | (0.05)              |                        |                                  |
| $R^2$       | 0.02     | 0.01     | 0.02        | 0.02                | 0.02                | 0.03                   | 0.40                             |
| $F$         | 9.48**   | 2.62NS   | 7.83**      | 8.43**              | 5.97*               | 11.05**                | 36.78***                         |

Source: The authors.

Notes: *** p < .000; ** p < .01; * p < .05; † p < .10; NS p > .10. Standard error (SE) for each beta coefficient is given in parenthesis.
Table 2. Results of the Analysis for Hypothesis H3

| Effect ($\beta$) | SE   | LLCI | ULCI |
|------------------|------|------|------|
| The total effect of EIO on human resource management behaviour | **-0.11** | **0.05** | **-0.20** | **-0.02** |
| The direct effect of EIO on human resource management behaviour | -0.01 | 0.04 | -0.09 | 0.06 |
| The total indirect effect of EIO for the relationship between all IVs and HRM behaviour | **-0.10** | **0.03** | **-0.17** | **-0.03** |

The specific indirect effect of EIO on human resource management behaviour for the independent variable

| Searching       | -0.02 | 0.01 | -0.05 | -0.00 |
| Planning        | -0.01 | 0.01 | -0.03 | 0.00 |
| Marshalling     | 0.01  | 0.01 | 0.00  | 0.04 |
| Implementing people | **-0.05** | **0.02** | **-0.10** | **-0.02** |
| Implementing finance | -0.01 | 0.01 | -0.03 | 0.01 |
| Coping with challenges | -0.03 | 0.01 | -0.06 | -0.01 |

**Source:** The authors.

**Note:** Values in bold show significant mediation relationships (absence of a zero value between LLCI and ULCI confirms the mediation effect). Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000. Level of confidence for all confidence intervals in the output: 95%.

$p < .01$; implementing-finance related tasks: $\beta = -0.12$, SE = 0.05, $p < .05$; coping with unexpected challenges: $\beta = -0.16$, SE = 0.05, $p < .01$). It means that EIO does decrease the entrepreneurial self-efficacy in the dimensions of searching, marshalling, implementing-people related tasks, implementing-finance related tasks and coping with unexpected challenges. Thus $H2a, H2c, H2d, H2e$ and $H2f$ are supported. Although the coefficient for planning was also negative, it was not found to be significant. Thus, $H2b$ is not supported.

The Mediating Role of ESE Dimensions

Table 2 shows that the total effect of EIO on the entrepreneurs’ HRM behaviour was found to be significant ($\beta = -0.11$, SE = 0.05, $p = 0.019$). But, the direct effect of EIO on the entrepreneurs’ HRM behaviour was not found to be significant ($\beta = -0.01$, SE = 0.04, $p = 0.715$). This result gives clear support for the mediating effect of ESE in the relationship between EIO and the entrepreneurs’ HRM behaviour. The total indirect effect was significant ($\beta = -0.10$, SE = 0.03, LLCI = -0.17, ULCI = -0.03).

Further, the inspection of the role of each of the ESE dimensions show that only three out of six dimensions significantly mediated the relationship between EIO and entrepreneurs’ HRM behaviour; they are searching ($\beta = -0.02$, SE = 0.01, LLCI = -0.05, ULCI = -0.00); implementing-people related tasks ($\beta = -0.05$, SE = 0.02, LLCI = -0.10, ULCI = -0.02) and coping with unexpected challenges ($\beta = -0.03$, SE= 0.01, LLCI = -.06, ULCI = -0.01). In addition, the normal theory tests (also known as Sobel Test) done to examine the specific
indirect effects of EIO on the entrepreneurs’ HRM behaviour also confirms the results mentioned above (see Table 3). Though EIO affects five dimensions of ESE apart from planning, only three of these dimensions, ultimately have a mediating effect on the entrepreneurs’ HRM behaviour. This suggests that $H_3$ is partially accepted. Specifically, $H_{3a}, H_{3d}$ and $H_{3f}$ are accepted.

### Discussion

The study aims to examine how EIO and ESE impact entrepreneurs’ HRM behaviours. HRM behaviour has been identified as a prominent entrepreneurial competence by previous research (Luthans & Ibrayeva, 2006; Messersmith & Wales, 2011). But, the EIO as a construct in this context was investigated for the first time in this study. It is necessary to examine the impact of EIO as information explosion and overload has become a real problem for contemporary managers and more so for entrepreneurs. We used ESE as a multi-dimensional construct by adapting it from previous studies (DeNoble et al., 1999; McGree et al., 2009). Based on the conceptual model proposed (Figure 1), we expected the EIO to have an adverse impact on entrepreneurs’ HRM behaviour and also on various ESE dimensions. Surprisingly, EIO did not have any adverse effect on the entrepreneurs’ HRM behaviour. Hence, the role of ESE becomes important as it has an indirect impact by playing a mediating role. After examining the results from Table 1, it is clear that EIO has had an adverse effect on all the ESE dimensions of searching, marshalling, implementing-people related tasks, implementing-finance related tasks, and coping with unexpected challenges. The only ESE dimension that did not have an impact is the planning dimension.

The negative impact of EIO on most of the ESE dimensions is an expected outcome. Information overload can cause entrepreneurs to feel stressed and under pressure when undertaking entrepreneurial tasks. Therefore, EIO can lower entrepreneurs’ perception of their own ability to make decisions related to various tasks such as searching, marshalling or implementation. The entrepreneurs may also feel overwhelmed with the amount of information and experience a sense of lack of

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**Table 3. Normal Theory Test (Also Known as Sobel Test) for Specific Indirect Effects of EIO on Human Resource Management Behaviour**

| ESE Dimensions            | Effect | SE  | Z      | P       |
|---------------------------|--------|-----|--------|---------|
| Searching                 | -0.02  | 0.01| -1.73  | 0.083   |
| Planning                  | -0.01  | 0.01| -1.05  | 0.295   |
| Marshalling               | 0.01   | 0.01| 1.46   | 0.144   |
| Implementing people       | -0.05  | 0.02| -2.66  | 0.008   |
| Implementing finance      | -0.01  | 0.01| -0.82  | 0.412   |
| Coping with challenges    | -0.03  | 0.01| -2.24  | 0.025   |

**Source:** The authors.

**Note:** Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000. Level of confidence for all confidence intervals in the output: 95.00. Significant mediation effects are shown in boldface.
control resulting in outcomes such as wasting time and making mistakes. It implies that EIO will negatively impact ESE. These findings are consistent with previous research that anxiety or stress, caused by information overload, can lead to dysfunctional consequences and poor decision quality (Eppler & Mengis, 2004) and negatively impact self-efficacy (Conger & Kanungo, 1988; Hunter, 2004).

Further, we find that there is a strong negative relationship between EIO and the ESE dimension of coping with challenges. Coping with challenges is a key issue for successful ventures, and relevant information is necessary to reduce uncertainty (Schick et al., 1990). However, while entrepreneurs seek more information in trying to cope with new challenges, EIO will negatively impact their ability to do so. Of the six ESE dimensions, EIO does not have any significant impact on the planning dimension. This is surprising because planning is considered to be a much more complex task. One possible explanation is that entrepreneurs patently realise their inability in this area and seek help from external professionals such as advisors or mentors. Overall, as hypothesised, EIO does have a negative impact on most of the dimensions of ESE. These results are consistent with the negative impact reported in different disciplines such as marketing, psychology and information sciences (Hunter, 2004; Hunter & Goebel, 2008; Roetzell, 2019).

As pointed out earlier, contrary to our expectation, the results show no direct association between EIO and the entrepreneurs’ HRM behaviour. Perhaps, the human resource activities undertaken by entrepreneurs in the current study are mostly informal or semi-formal as they seek to establish and build new ventures in an emerging economy with relatively weak institutional settings. Previously, Heneman and Berkley (1999) found that the recruiting strategies were ad hoc, and where convenient, inexpensive and directly controllable sources are chosen. Similarly, Cardon and Stevens (2004) too found that founder-owners follow non-traditional methods of managing staff. For example, entrepreneurs tend to engage in unstructured training of staff through informal instructions and socialisation, so they do not necessarily do formal appraisals, and often handle employee issues arbitrarily. This type of informal and convenient way of managing HRM activities may mean that the entrepreneurs are perhaps not seeking more information and therefore are not significantly impacted by EIO.

However, when testing the indirect effects of EIO on the entrepreneurs’ HRM behavioural activities, ESE is found to be playing a mediating role. As seen from Table 1, the results place EIO as an important antecedent to ESE. If EIO leads to lowering of ESE, it may drive such individuals to harbour images of failure and lower perseverance levels (Chen et al., 1998). Other studies (Drnovšek et al., 2010; Hallak et al., 2014) also found that ESE is a significant predictor of venture performance. Consequently, the EIO that can adversely impact ESE is likely to cause a negative impact on entrepreneurs’ HRM behaviour. The results from Table 2 show that three of the ESE dimensions, namely searching, implementing, people related tasks and coping with unexpected challenges, have a significant mediating effect on the entrepreneurs’ HRM behaviour. It is clear that if EIO does not adversely affect entrepreneurs’ HRM behaviours directly, but it does so via various dimensions of ESE. It will be particularly troubling in new ventures,
where effective HRM activities do require entrepreneurs to hire good employees and manage them well. If entrepreneurs are not confident in their searching capabilities due to EIO, it will have a negative impact on their HRM behaviour. Further, if the entrepreneurs’ self-efficacy is reduced in the dimensions of implementing people-related tasks and coping with unexpected challenges, it could hinder their HRM activities and their ability to cope with the uncertainty that is the hallmark of an emerging economy (Bruton et al., 2013).

**Conclusion and Implications**

Our study shows that, as expected, the results offer evidence of a negative impact of EIO on most of the dimensions of ESE. The EIO does not directly impact the entrepreneurs’ HRM behaviour, but there is an indirect impact through three specific ESE dimensions that have been identified. The negative impact of EIO is so significant that most of the ESE dimensions are adversely impacted. The advances in information technology and social media mean that practising entrepreneurs grapple with a lot more information than before and find it challenging to use it effectively. Sleptsov and Anand (2008) have already pointed out the need for a balance between information-gathering and information-processing capabilities of the entrepreneurs for effective performance. We expect the problem of EIO to become acute in the coming years as the information society envelops all aspects of our life, and as countries become more interdependent in the globalised world. Hence, it calls for improving both cognitive abilities of the entrepreneurs and for use of tactical tools to process the data collected for decision making systematically. Overall, the results highlight the importance of EIO in the entrepreneurship domain for future research.

The results from our study reinforce the importance of ESE for entrepreneurs’ performance. The dimensions identified are relevant for our understanding of ESE as a multi-dimensional construct. Such an approach allows identifying specific strengths or weaknesses within ESE for appropriate interventions. Given that the study also covers entrepreneurs’ HRM behaviour, it is perhaps necessary to undertake specific training that can enhance both ESE dimensions and HRM behaviours for them. Further, successful entrepreneurs are those who not only establish their ventures but also lead them by prudently allocating various resources, including human resources. Entrepreneurs who are competent in HRM behaviours will not only help their business ventures to succeed but also be well placed to formally develop HRM strategies for future firm performance (Allen et al., 2013; Messersmith & Wales, 2011). Our study also provides a platform for further empirical investigation on how EIO could impact other aspects of entrepreneurs’ behaviours and ESE dimensions.

Overall, our study contributes to our understanding of the challenges that entrepreneurs face in emerging economies by investigating the impact of entrepreneurs’ self-efficacy and information overload in their HRM behaviour. Specifically, our study makes two significant contributions to the field of entrepreneurship. First, we identified six dimensions relevant to entrepreneurs’
self-efficacy and also validated these dimensions by testing empirically. Future research can focus on empirical testing of the multiple dimensions of ESE in different contexts to develop suitable training programmes that target specific ESE dimensions. Such dimension-specific training can strengthen the overall self-efficacy of both potential and practising entrepreneurs, which would not have been possible through the use of the unidimensional construct of ESE. Secondly, we introduced the concept of information overload (EIO) in entrepreneurship. By recognising information overload and its impact on factors of entrepreneurship, we have the opportunity to acknowledge its role in the entrepreneurs’ cognitive and information processing ability for venture performance.

For academics, these results are important so that they can design curriculum in entrepreneurship and other business courses to prepare students to deal with the challenge of information overload. For practitioners, the results can serve as a guide to design required training tools and practices to help entrepreneurs develop their self-efficacy and manage information overload more confidently and achieve entrepreneurial tasks. We hope that this preliminary research in the area of entrepreneurial information overload and self-efficacy dimensions will generate interest for further research.

Our study has a few limitations. First, while several factors could impact entrepreneurs’ behaviour, the scope of the study is purposely focused on the role of EIO and ESE on entrepreneurs’ HRM behaviours. We did not include other established factors in our research to keep the study manageable and to gain insights into the new variable of EIO and a new set of dimensions of ESE that we focused upon. Second, despite of different definitions of entrepreneurship, we have used a behavioural definition to consider entrepreneurs who own and manage their business ventures as used in previous studies (Caliendo et al., 2014; Stewart & Roth, 2001). Notwithstanding these limitations, we believe that our research will help scholars and practitioners by providing insights into how information overload and self-efficacy dimensions influence entrepreneurs’ behaviours.

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