



## **Negative Moderating Effect of Social Intelligence on the Relationship between Entrepreneurial Talent and Sustainable Performance among Technology-based SMEs in Malaysia**

Dayang Hasliza Muhd Yusuf<sup>1</sup>, Mohd Salleh Hj Din<sup>2</sup> and Muhammad Shahar Jusoh<sup>3</sup>

### **ABSTRACT**

*This study demonstrates the negative effect of social intelligence on the relationship between entrepreneurial talent and sustainable performance. The entrepreneurial talent refers to the ability to carry out entrepreneurial activities. The negative moderating effect of social intelligence explains the importance of having work experience as a manner to develop necessary skills prior to starting up a new business. This study uses data from 91 entrepreneurs in technology-based SMEs in Malaysia and employs structured equation modelling analysis. The results set a boundary condition to the generally presumed relationship between entrepreneurial talent and sustainable performance of SMEs, thereby improving the understanding of how these phenomena are related.*

**Keywords:** entrepreneurial talent, social intelligence, sustainable performance, technology-based SMEs

### **1. INTRODUCTION**

Social intelligence is about a person's ability to understand and manage other people, and to engage in adaptive social interactions including managing interpersonal relationship (Goleman & Boyatzis, 2008). Since social intelligence is related to greater ability, social intelligence may attenuate other relationships that depend on ability. Hence, social intelligence may act as a moderating role on the relationship between other constructs that operate on the basis of enhanced ability. This paper argues for the case for a moderating effect of social intelligence on such a relationship— between entrepreneurial talent, which refers to the ability to carry out entrepreneurial activities (Shrivastava, 2010), and sustainable performance. A significant number of studies have been devoted to examine the effect of intrapersonal or self-management skills, or emotional

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<sup>1</sup> Pusat Pengajian Inovasi Perniagaan & Teknousahawan, Universiti Malaysia Perlis, 01000 Kangar, Perlis, Malaysia. E-mail: dayanghasliza@unimap.edu.my

<sup>2</sup> Pusat Pengajian Inovasi Perniagaan & Teknousahawan, Universiti Malaysia Perlis, 01000 Kangar, Perlis, Malaysia. E-mail: sallehdin@unimap.edu.my

<sup>3</sup> Pusat Pengajian Inovasi Perniagaan & Teknousahawan, Universiti Malaysia Perlis, 01000 Kangar, Perlis, Malaysia. E-mail: shahar@unimap.edu.my

intelligence, on entrepreneurial behaviour. However, little is known about the influence of the social intelligence (interpersonal or relationship management skills) on the entrepreneurial performance.

Entrepreneurial talent, on the other hand, is the ability to carry out entrepreneurial activities. The Resource-Based View (RBV) recognizes entrepreneurial talent as among the individual level strategic resources that can influence performance. However, the effect of entrepreneurial talent on performance has not been consistent for some of the underlying measures. For instance, Mayer-Haug *et al.* (2013), in their review on the aspects of entrepreneurial talent on the different performance outcomes, found that education is not significantly related to performance which is inconsistent with findings from other studies. Similarly, authors have argued that experience may have negative effect on entrepreneurial success based on the 'job embeddedness' model. The more embedded an individual in his job, the lesser will the ability to develop a broad range of entrepreneurial skills and acumen (Mai & Gu, 2012). Since social intelligence has been found to have a positive influence on individual performance, social intelligence could potentially moderate the relationship between entrepreneurial talent and sustainable performance and provide a better explanation on the inconsistent relationship. Demonstration of this effect advances current theory by setting a boundary condition for the generally presumed relationship between entrepreneurial talent and sustainable performance.

### **1.1 Social Intelligence**

Historically, the term 'social intelligence' is used by E. L. Thorndike in 1920 to a person's ability to understand and manage other people, and to engage in adaptive social interactions. Numerous studies have attempted to explore the social intelligence construct (Kihlstrom & Cantor, 2000; Silvera, Martinussen, & Dahl, 2001), resulting in distinct meanings assigned to the concept of social intelligence across a wide perspective of cognitive, behavioural, and psychometric (Silvera *et al.*, 2001). Goleman & Boyatzis (2008) further extends the concept to include managing interpersonal relationship. Other authors argue that the concept of social intelligence is closely related to that of emotional intelligence and have suggested that the two concepts may relate to different aspects of the same construct and could actually be referred to as 'emotional and social intelligence' (Bar-On, 2006). Nevertheless, the demarcation between the concepts lies in the dimension of the two concepts whereby social intelligence is about the interpersonal or relationship management skills, while emotional intelligence deals with the intrapersonal or self-management skills. Studies have examined the intrapersonal or self-management effect of the skills on entrepreneurial behaviour. However, little is known about the influence of the social intelligence (interpersonal or relationship management skills) on the entrepreneurial performance.

## 1.2 Entrepreneurial Talent and Sustainable Performance

There are great interest in the subject of entrepreneurial talent as reflected by the abundance of literature on the topic (Ostergaard, 2014), and has dated back as early 1990 when William J. Baumol first coined the term entrepreneurial talent to discuss entrepreneurs' allocation of talent, as one the resources, into productive, unproductive or destructive activities. In fact, the importance of entrepreneurial ability as a type of a firm's resources has been recognised much earlier when Schultz (1980) describes entrepreneurial ability as the abilities to deal with the fast changing market conditions in a dynamic economy, and to make non-routine decisions, and to relocate resources accordingly. The significance of entrepreneurial talent effect on venture performance is further stressed by Lichtenstein & Lyons (2001) who strongly argues that in enterprise development, effort should be focused on development of entrepreneurial talent in order to develop successful companies. Moreover, studies conducted at the firm level has also revealed that entrepreneurial talent is among the significant influence of firm performance (Ferrante, 2005; Lichtenstein & Lyons, 2001; Mayer-Haug et al., 2013). For instance, a study conducted among small tourism ventures reveals that among the various types of capital resources of a firm, entrepreneurs and their intellectual abilities form the core of venture creation, overshadowing factors, such as location, in determining venture success (Haber & Reichel, 2007).

Based on the premise of the significant influence of entrepreneurial talent on the economic, firm and individual performance, policy makers all over the world invested millions of financial and non-financial resources in development programs to enhance human capital, i.e. equipping entrepreneurs with knowledge and capabilities (Backlist, 2014; Calcagnini & Favaretto, 2011; ERIA, 2014; Rideout, 2012; Sin, 2010). Unfortunately, despite the interest and the hefty investment of resources by governments, there is still lack of understanding on the extent of talent as one of the factors to drive performance (Mayer-Haug et al., 2013). Existing studies also surround firm level instead of the individual level; hence become a compelling reason to investigate individual entrepreneurial level influence on firm performance (Ostergaard, 2014).

There is also debate on whether entrepreneurial talent is innate or can be nurtured or whether entrepreneurs are born or can be developed. This lead the discussion to investigation of the source of entrepreneurial competencies and skills set based on the investment hypothesis and endowment hypothesis. This leads to the emergence of two opposing school of thoughts on the origin of entrepreneurial talent, namely, the purposeful investment, and the entrepreneurial endowment (Lazear, 2004; Silva, 2006; Stuetzer, Obschonka, & Schmitt-Rodermund, 2013). The investment hypothesis posits that individuals who are interested to pursue entrepreneurial career would consciously and purposefully invest in a balanced skill set by seeking engagement in variety of education, and jobs in order to equip themselves with the entrepreneurial talent skills required to perform the

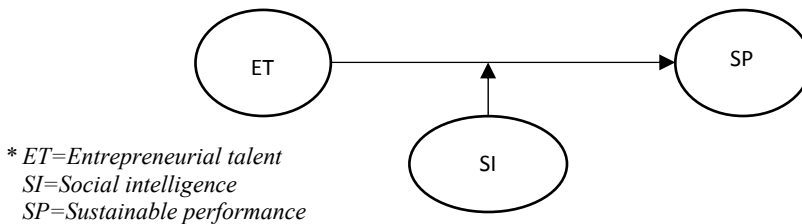
multiple roles required to start up a business venture (Lazear, 2004; Stuetzer et al., 2013). This view of the origin of entrepreneurial talent is based on the human capital theory (Kauermann, Tutz, & Bruderl, 2005; Schultz, 1980) and is reflected in the heavy investment in business, entrepreneurship, and vocational education by governments and individuals (Stuetzer et al., 2013). On the other hand, the endowment hypothesis argues that certain individuals are endowed with certain personalities which make the individual seek to acquire diverse skill and competencies. Entrepreneurial talent, which is referred to as the varied and balanced skills set, is required in order to successfully execute the multiple roles that an entrepreneur has to play in starting up their ventures. Guided by the review studies by Mayer-Haug et al. (2013), the varied and balance skills set is defined as education, experience and skills, and entrepreneurial networking.

Sustainable performance is measured based on the conceptualization by Cohen, Smith, & Mitchell (2008), who posits that the venture performance should include the achievement of economic, environmental and social value creation objectives. The measures used for sustainable performance were of perceptual nature developed by redefining and of performance measures of studies relating to technology-based SMEs.

The effect of entrepreneurial talent on performance has not been consistent for some of the underlying measures. For instance, Mayer-Haug et al. (2013), in their review studies on the aspects of entrepreneurial talent on the different performance outcomes, found that education is not significantly related to performance which is inconsistent with findings of other studies (Crook, Todd, Combs, Woehr, & Ketchen Jr, 2011; Delmar & Shane, 2006; Haber & Reichel, 2007; van Praag, van Witteloostuijn, & van der Sluis, 2013; Raposo & Do Paço, 2011; Schultz, 1980; Silva, 2006; Weber & Schaper, 2004; Wiklund, Davidsson, Audretsch, & Karlsson, 2011). Similarly, authors argue that experience may have negative effect on entrepreneurial success. This is based on the 'job embeddedness' model, which explains that the more embedded an individual in his job, the more ties will the individual has with the employer organisation, including social network, will decrease the ability to develop a broad range of entrepreneurial skills and acumen (Mai & Gu, 2012).

This research focused on entrepreneurial talent and sustainable performance and the positive relationship between these two constructs. Therefore, to extend the understanding of this domain will be achieved through a study of moderating factors of the relationship between entrepreneurial talent and sustainable performance. This is especially so in entrepreneurial development research where a positive relationship between entrepreneurial talent and sustainable performance leads to the presumption that prior work experience leads to entrepreneurial performance. Accordingly, the present study advances the understanding of the boundary conditions of the relationship between entrepreneurial talent and sustainable performance by proposing a moderating

effect of social intelligence. The choice of the moderator variable was motivated by the positive influence of social intelligence on sales and marketing performance, which are incidentally among the challenges faced by entrepreneurs. Figure 1 below depicts the study framework.



**Figure 1: The study framework**

The relationship between entrepreneurial talent and sustainable performance is expected to be stronger among individuals with low social intelligence. When social intelligence is low, entrepreneurial talent boosts performance (Haber & Reichel, 2007; Mayer-Haug et al., 2013). But, as argued earlier, individuals with high social intelligence are able to perform well due to their more effective management of interpersonal relationship. This effect will occur irrespective of entrepreneurial talent. Therefore, when social intelligence is higher, the relationship between entrepreneurial talent and sustainable performance will be weaker. It is expected that social intelligence will negatively moderate the effect of entrepreneurial talent on sustainable performance such that the effect is stronger among those with low social intelligence.

## 2. METHOD

### 2.1 Participants and Design

The sample size consists of 91 respondents. The majority of the respondents (62%) were male, held at least a bachelor's degree qualification (70%), and studied in the fields related to pure or technical sciences (54%), had prior start-up experience (59%). Participants were entrepreneurs in technology-based businesses which were drawn from a list of tenants in technology-business incubators, a technology-park, grantees of technology-related funds, and SMEs in the list of Green-Lane Policy (GLP)<sup>4</sup>. Participants were asked to complete a set of questionnaire designed to capture their demographic profile, perceptions towards their venture sustainable performance, entrepreneurial talent, and social intelligence.

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<sup>4</sup> The GLP was introduced by the Malaysia Ministry of Finance as among the incentives to further boost the performance of TBS in Malaysia. Eligible SMEs have to be certified by any of the following organisations: (1) SME Corporation, (2) Malaysian Biotechnology Corporation (Biotech), (3) Multimedia Development Corporation (MDeC), and (4) MTDC.

Entrepreneurial talent was measured using a 4-item scale (Dencker, Gruber, & Shah, 2009; Mai & Gu, 2012; Stuetzer et al., 2013). Responses were obtained on a 5-point response format with anchors 1: Strongly disagree and 5: Strongly agree. Reported internal consistency reliability was 0.91 (Hair, Hult, Ringle, & Sarstedt, 2013).

Social intelligence was measured using a 13-item scale (Silvera et al., 2001). Responses were obtained on a 5-point response format with anchors 1: Strongly disagree and 5: Strongly agree. A total of six items were reverse-scored, and thus need to be recoded. A total of six items were dropped in order to improve the internal consistency reliability from below 0.6 to 0.904 (Hair et al., 2013).

On the other hand, sustainable performance was measured using an 11-item scale. Responses were obtained on a 5-point response format with anchors 1: Not satisfied and 5: Highly satisfied. Reported Cronbach's alpha was 0.95.

### 3. RESULTS

Data analysis was conducted using the Partial Least Square Structured Equation Modelling (PLS-SEM) method. There are three important parts in data analysis using the PLS-SEM, 1) measurement model assessment, 2) Goodness of Fit (GoF), and 3) structural model assessment.

Among the test conducted in the measurement model assessment is the convergent validity test using examination of indicator reliability of all items, and the Average Variance Extracted (AVE) of all the constructs under study. Table 1 summarise the results of convergent validity tests based on AVE and factor loadings of each items for all three constructs. Items with loading values below 0.4 were deleted. The remaining items with loading values below 0.708 were examined in order to investigate their effect on the AVE score for the constructs (Hulland, 1999). The values of factor loadings for the remaining 22 items lie above the threshold value of 0.708 as recommended by Byrne (2016). This indicates that all items have much in common with other items within the same construct.

Table 1: Convergent validity based on item loadings and AVE

Constructs	Item	Loadings	AVE	AVE>0.5	Loadings>0.708
Entrepreneurial talent (ET)	ET01	0.812	0.704	YES	YES
	ET02	0.815			
	ET03	0.879			
	ET04	0.849			
Social intelligence (SI)	SI01	0.832	0.633	YES	YES
	SI02	0.798			
	SI03	0.812			

	SI04	0.803			
	SI05	0.771			
	SI06	0.785			
	SI07	0.768			
Sustainable performance (SP)	SP01	0.785	0.642	YES	YES
	SP02	0.768			
	SP03	0.758			
	SP04	0.813			
	SP05	0.822			
	SP06	0.744			
	SP07	0.856			
	SP08	0.838			
	SP09	0.826			
	SP10	0.811			
	SP11	0.815			

Next, is the convergent validity assessment based on the AVE criterion. Based on Table , the values of AVE for ET, SI and SP constructs are more than 0.5 that is the recommended value for AVE (Hulland, 1999). This indicate that the entrepreneurial talent shared 70.4% of variance with the assigned items, while social intelligence shared 63.3% of variance with the assigned items, and sustainable performance shared 64.2% of variance with the assigned items. In summary, the convergent validity tests were fulfilled by the study model representing the indirect effect of social intelligence (SI) on the relationship between entrepreneurial talent (ET) and sustainable performance (SP).

The next assessment is the discriminant validity which is conducted by examining the cross loadings of items, and the Fornell-Larcker criterion. For the cross loadings of items, based on **Error! Reference source not found.**, the values of outer loading for items associated with the entrepreneurial talent (ET), social intelligence (SI), and sustainable performance (SP) (figures in bold) are found to be highest on each construct the items are supposed to measure compared to the values of loadings of the same items on other constructs. Thus, the convergent validity requirement on cross loadings examination is fulfilled.

Table 2: Factor loadings of items for the ET, SI and SP constructs

Items	ET	SI	SP
ET01	<b>0.812</b>	0.306	0.3
ET02	<b>0.815</b>	0.321	0.377
ET03	<b>0.879</b>	0.387	0.28
ET04	<b>0.849</b>	0.402	0.294
SI01	0.286	<b>0.832</b>	0.378
SI02	0.282	<b>0.798</b>	0.416
SI03	0.391	<b>0.812</b>	0.462

SI04	0.311	<b>0.803</b>	0.429
SI05	0.276	<b>0.771</b>	0.326
SI06	0.373	<b>0.785</b>	0.397
SI07	0.402	<b>0.768</b>	0.408
SP01	0.227	0.273	<b>0.758</b>
SP02	0.215	0.33	<b>0.788</b>
SP03	0.413	0.435	<b>0.813</b>
SP04	0.341	0.374	<b>0.822</b>
SP05	0.355	0.33	<b>0.744</b>
SP06	0.34	0.359	<b>0.736</b>
SP07	0.305	0.426	<b>0.856</b>
SP08	0.301	0.402	<b>0.838</b>
SP09	0.284	0.514	<b>0.826</b>
SP10	0.29	0.461	<b>0.811</b>
SP11	0.241	0.498	<b>0.815</b>

Table 3 indicates that the square root values of AVE for all three constructs are higher than the associated cross-loading figures indicating that the discriminant validity requirements are satisfied at both the item and construct level. The difference between loadings of items assigned to the ET construct is more than 0.1 of the loadings on SP and vice versa (Snell & Dean Jr, 1992; Vinzi, Chin, Henseler, & Wang, 2010).

Table 3: Fornell-Larcker criterion evaluation for SI and ET→SP relationship

	AVE	ET	SI	SP
ET	0.704	<b>0.839</b>		
DM	0.633	0.420	<b>0.796</b>	
SP	0.642	0.379	0.510	<b>0.801</b>

\* Diagonal elements and in bold are square roots of AVE.

These results indicate that the indicators represent the assigned construct, and all the constructs of ET, SI, and SP are truly distinct from each other.

The last assessment criteria is the HTMT criterion which is the ratio of correlations within the constructs to correlations between the constructs (Henseler, Ringle, & Sarstedt, 2015; Ramayah, Cheah, Chuah, Ting, & Memon, 2017). Based on Table 4, the HTMT ratio values are 0.410, and 0.536, which are below 0.85 as suggested by Kline (2011). Thus, for the SI on ET→SP relationship, the discriminant validity has been ascertained.



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	ET	SI	SP
	0.410	0.536	
	CI 0.90	CI 0.90	
<b>SP</b>	(0.055, 0.334)	(0.241, 0.563)	

Table 5 summarise all the results of the measurement model assessment conducted on the constructs and items of the study.

Table 5: Summary of results for measurement model assessment for ET→SP

Type of test	Evaluation Criteria	Requirements	Results
<b>Internal consistency reliability</b>	Cronbach's alpha ( $\alpha$ )	$\alpha > 0.8$	Met for all items.
	Composite Reliability (CR)	$0.60 < CR < 0.95$	Met for all constructs.
<b>Convergent validity</b>	Indicator reliability	Outer loadings $> 0.5$	Met for all items.
	Average Variance Extracted (AVE)	AVE $> 0.50$	Met by all constructs.
<b>Discriminant validity</b>	Cross loadings of indicators	Indicator should have the highest loadings on the assigned construct compared to its loadings on other constructs.	Fully met by all items.
	Fornell-Larcker Criterion (1981)	Square root of AVE $>$ latent variable correlations	Fully met for all constructs.
	HTMT criterion	HTMT $< 0.85$ Confidence interval does not have value of 1.	Met for all constructs.

Thus, for the moderated effect of social intelligence (SI) on the entrepreneurial talent and sustainable performance relationship (ET→SP), all the measurement model assessment criteria of internal consistency reliability, convergent validity, and discriminant validity were met by the items and constructs of entrepreneurial talent (ET), social intelligence (SI), and sustainable performance (SP).

The next step is model fit or Goodness of Fit (GoF) assessment of the moderation effect of SI on the ET→SP relationship. The concept of 'model fit' for variance-based PLS (PLS-SEM) is slightly different from Covariance-Based SEM (CB-SEM), where PLS-SEM statistics focus on the differences between observed variables (items) and approximated variables (constructs) of the dependent variable and the value predicted by the study model (Ramayah et al., 2017). This

study adopts the SRMR and NFI assessment methods for the study model fit examination.

Table 6: GoF assessment for SI and ET→SP

	Saturated Model	Estimated Model
<b>SRMR</b>	0.078	0.078
<b>NFI</b>	0.718	0.718

Based on Table 6, the SRMR value is less than 0.10 which is the recommended threshold (Hu & Bentler, 1999). The NFI value is 0.718 which is lower than the recommended value of at least 0.90 (Lohmöller, 2013; Ramayah et al., 2017). Thus, the ET→SP model meets the model fit criteria for SRMR but not the NFI criteria.

The next step is structural model assessment of the SI moderation effect on ET→SP relationship, which involves estimating the relationship among the exogenous (predictor), in this model ET and DM, and endogenous (criterion) variables, which is SP. The first step of the structural model assessment procedure is the model assessment for collinearity issues. As there is only a single independent variable in the ET→DM→SP model, then collinearity is not an issue at this stage of analysis.

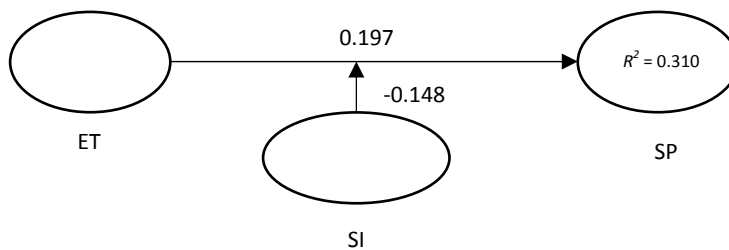


Figure 2: Structural model assessment results

Table 7 lists the summary of results for the structural model assessment for the moderated ET→SP (ET\*SI→SP) relationship.

Table 7: Summary of structural model assessment for ET→DM→SP relationship

Relationship	Std β	SE	t-value	R <sup>2</sup>
ET*SI→SP	-0.148	0.008	2.466**	0.310

Note: \*\*\*p<0.05

Based on the assessment of the path coefficient, the strength of ET\*SI→SP relationship is -0.148 which indicate that the interaction effect of SI on ET→SP relationship is negative. A one standard deviation point increase in SI will lead to

0.148 reductions in SP. The ET\*SI→SP can be considered as moderate (Hair et al., 2013). The significance of the ET\*SI→SP relationship is further evaluated by comparing the empirical  $t$ -value against the critical  $t$  for a specific level of significance (Hair et al., 2013). The empirical  $t$  statistics for the ET\*SI→SP is given at 2.466 and is higher than the critical  $t$  value at 5% level of confidence. Thus, on this basis, the moderated relationship between entrepreneurial talent and sustainable performance significantly different from 0 at 5% level of confidence.

The second analysis is the coefficient of determination  $R^2$ . The value of  $R^2$  indicates the predictive accuracy of the model. Hair et al. (2013) suggested that the threshold for an acceptable  $R^2$  value should be judged based on the model complexity and the research discipline. In the case of the moderated effect of social intelligence on the entrepreneurial talent and sustainable performance relationship (ET\*SI→SP), the  $R^2$  value is 0.310, which indicates that the moderation effect of social intelligence able to explain 31.0% of the variation in sustainable performance.

#### 4. DISCUSSION

This study extends the understanding of entrepreneurial talent by demonstrating the negative moderating influence of social intelligence on the relationship between entrepreneurial talent and suitable performance. The results illustrate the sustainable performance relationship that depends on entrepreneurial talent are different for individuals with low versus high social intelligence. This study provides support for the argument that social intelligence operates through higher ability and hence attenuates the relationship between other variables that operate through ability and their consequences. The negative effect indicates that among entrepreneurs who are skilful in social intelligence, the lack of entrepreneurial talent has less detrimental effect on sustainable performance. However, in the case of technology-based entrepreneurs who have lower social intelligence, lack of entrepreneurial talent will have a large detrimental effect on sustainable performance. TBS owners who have lower social intelligence would benefit more from entrepreneurial experience and network developed prior to starting up a new venture. For entrepreneurs with lower level of social intelligence, entrepreneurial talent accumulated through prior work experience and exposure becomes more important in order to achieve sustainable performance. This brings into perspectives of the pertinence of prior work experience in developing managerial and marketing skills. Thus, based on the findings of this study, social intelligence is among the skill that is important for technopreneurs in managing their interpersonal relationship for business development.

One of the key limitations of this study is the reliance on cross-sectional data and the survey method. None of the variables, entrepreneurial talent, social intelligence or sustainable performance was manipulated. Replication of the

study with appropriate manipulations will provide a more stringent test of the hypotheses.

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