The impact of principals' entrepreneurial leadership behaviour on school organizational innovativeness

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Abstract: Entrepreneurial leadership has been increasingly applied in various organizations to foster the process of innovation, face the challenges and crises of leadership in the current organization environments and consequently improve the performance of the organizations. However, research on the impact of entrepreneurial leadership on the performance improvement of educational organizations and specifically school organizational innovativeness is scarce. Utilizing a sample of 300 public secondary school teachers in Malaysia, we examined the relationship between principal's entrepreneurial leadership behaviour and school organizational innovativeness. The data were analysed using Structural Equation Modelling. The results indicated that entrepreneurial leadership behaviour of principals had a significant positive impact on the teachers' perceived school organizational innovativeness. More specifically, the findings of the study suggest that different aspects of principal's entrepreneurial leadership behaviour improve the implemented organizational innovations and the changes they created in schools. Implications of the findings for school leadership research and practice are discussed.
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1. Introduction

Entrepreneurial leadership has been increasingly applied in various non-profit and for-profit organizations (Ruvio *et al.,* 2010). This type of leadership behaviour enables leaders to foster the process of organizational innovation by recognizing and exploiting new opportunities to improve the performance of the organization, solving problems creatively and using resources effectively (Gupta *et al.,* 2004; Rae, 2007). Entrepreneurial leadership also empowers organizational leaders to face the challenges and crises of leadership task performances in the current turbulent organization environments (Swiercz and Lydon, 2002; Vecchio, 2003; Gupta *et al.,* 2004). In addition to its effect on the leaders' personal characteristics, entrepreneurial leadership also assists leaders to thrive their group members' creativity in developing new ideas to improve their task performances and consequently enhance the organization outcomes (Chen, 2007). Therefore, entrepreneurial leaders are not only competent in bringing about dramatic changes and innovations to the organization by developing a shared vision but also in directing the process of organizational innovation by exploring new opportunities and providing an environment that encourages and supports generating and implementing new ideas to achieve the vision (Gupta *et al.,* 2004; Burns, 2005).

Despite the fundamental impact of entrepreneurial leadership on improving leadership effectiveness and organizational performance, the critical role this leadership behaviour can play in improving educational organizations has not been fully investigated (Peck, 1991; Eyal and Inbar, 2003; Lebusa, 2009). Furthermore, research on the influence of entrepreneurial leadership on performance improvement of educational organizations and specifically school organizational innovativeness is scarce. This study examines the impact of principals' entrepreneurial leadership behaviour on teachers' perceived school organizational innovativeness in Malaysian secondary schools. The findings provide one of the first insights into the influence of entrepreneurial approaches at the personal level (principals' entrepreneurial leadership behaviour) on the educational organizational level (school innovativeness). This paper begins with a review of the literature on school leadership and innovation, moves to a discussion of the advantages of entrepreneurial leadership for school principals and posits the research hypothesis. Then, we present the research methods and findings. Finally, we conclude with discussing the implications of the findings for school leadership research and practice.

2. School leadership and innovativeness

School leadership has currently become a more challenging, ambiguous and complex role due to the schools' exposure to rapid changes and growing uncertainties in the educational environments (Eyal and Inbar, 2003; Hentschke, 2009; Lebusa, 2009). The increasing importance of education in knowledge-based economies including Malaysia

(Yusof, 2009; Chang *et al.,* 2011), higher demands for improving the quality of education in public schools and equipping students with the knowledge and skills required for their highly competitive future coupled with growing shortages of school resources and funds imposed various constraints to schools and made school leadership as a challenging task (Eyal and Inbar, 2003; Eyal and Kark, 2004; Hentschke, 2009). These challenges and changes in expectations demand innovative approaches that can create critical improvements in different aspects of public schools' organizational structure and leadership including curriculum, design, content, pedagogy, assessment methods and professional development programs (Berglund and Holmgren, 2006; Lebusa, 2009; Xaba and Malindi, 2010).

The urgent need for innovative approaches to school leadership and performance in the highly challenging and uncertain organizational environments has led scholars to ground school innovativeness on corporate entrepreneurship (Holt *et al.,* 2007; Kuratko *et al.,* 2007). Prior researchers argue that organizational innovativeness reflects the capacity of an educational organization to develop and implement novel ideas that lead to dramatic changes and improvements in the organization (Eyal and Inbar, 2003; Eyal and Kark, 2004). School innovativeness, therefore, has three main dimensions including the ability to recognize new opportunities and develop novel educational ideas, the propensity to take action and implement the innovations and the changes created by the innovations implemented in the school (Eyal and Inbar, 2003). Previous research indicates that innovations implemented in the schools could not create the fundamental intended changes in school performances (Eyal and Inbar, 2003; Park, 2012; Wei, 2012). This can be partially attributed to the leadership that failed to provide an appropriate environment for innovations in educational settings (Yusof, 2009; Park, 2012; Wei, 2012). However, the pivotal role that principals can play in fostering a proper environment for school innovativeness has only recently emerged in the educational leadership literature (Park, 2012). Furthermore, empirical research on the relationship between principal's leadership style and school innovation has highlighted principals as the agent or facilitator of innovations in schools (Park, 2012; Wei, 2012). The findings of Park's (2012) study indicate a significant impact of principals' leadership style on creating a supportive climate for school innovation. Yet, the influential effects of personal characteristics and leadership behaviour of the principals on school innovativeness has not been explored (Hall and Hord, 2011). We argue that school leader's behaviour has an influential impact on the organizational innovations implemented in the school.

3. School leadership and entrepreneurial leadership

Scholars argue that successful school innovation requires a different type of leaders who not only create novel ideas and opportunities for school improvement but also encourage and support innovative performances by school members (Eyal and Kark, 2004; Berglund and Holmgren, 2006; Park, 2012). To implement the changes and innovations at school, principals must also overcome different constrains and problems (Eyal and Inbar, 2003; Eyal and Kark, 2004; Hentschke, 2009). The leaders with the high capacity to develop innovative ideas, propensity to explore new opportunities, tendency to implement the new ideas to improve the performance of the organization, the ability to face the challenges and the competence to influence people to be innovative have been termed as entrepreneurial leaders (Cogliser and Brigham, 2004; Gupta *et al.,* 2004; Fernald *et al.,* 2005; Thornberry, 2006; Chen, 2007). Entrepreneurial leadership is basically originated from organizational entrepreneurship (Swiercz and Lydon, 2002; Vecchio, 2003; Gupta *et al.,* 2004; Kuratko *et al.,* 2007). However, it has been increasingly applied to enhance educational leadership (Yusof, 2009) and specifically school leadership and performance (Lebusa, 2009; Xaba and Malindi, 2010).

Education researchers strongly believe that entrepreneurial leaders can enhance effectiveness of educational leadership and specifically school leadership in several ways. First, entrepreneurial leaders' personal competence in developing new ideas, recognizing new opportunities and taking actions to exploit the opportunity can help principals open new doors for school performance improvement and meet the diverse needs of students (Eyal and Kark, 2004; Berglund and Holmgren, 2006; Mohd Sahandari *et al.,* 2009; Kempster and Cope, 2010). Second, entrepreneurial leaders' great ability to face the crisis and complexities of highly demanding situations helps school principals overcome the increasing challenges of their leadership task performances and ever-changing demands of the school environments (Hentschke, 2006). Third, entrepreneurial leaders are competent in applying their innovativeness, influencing people to be innovative, providing an encouraging and supportive environment for them to implement their new ideas and involving all of the staff in the process of organizational performance improvement (Gupta *et al.,* 2004; Chen, 2007; Kempster and Cope, 2010; Leitch *et al.,* in press). This competence helps school

leaders "bring out the best in each member of the team, helping them see the need for dramatic change, design exciting alternatives to traditional practices, and identify and remove significant obstacles" and engage all of the school members in the process of school improvement (Peck, 1991, p. 516).

Furthermore, entrepreneurial leadership develops through the interactions among personal characteristics of the leader, organizational and task performance demands and contextual factors (Kempster and Cope, 2010; Leitch *et al.,* in press). This type of leadership behaviour gives "each school its own gas pedal" which fosters each school performance based on its own constraints and situations (Peck, 1991, p. 516). Therefore, school principals need to apply entrepreneurial leadership approaches and principles in leading school innovations (Peck, 1991; Lebusa, 2009; Xaba and Malindi, 2010). However, there is little knowledge about the impact of principals' leadership style on school innovativeness (Park, 2012). We hypothesize that principal's entrepreneurial leadership behaviour has a significant impact on school organizational innovativeness.

4. Method

4.1 Participants

The population for this study was teachers from public secondary schools in Selangor, district of Hulu Langat, Malaysia. We included only public schools in this study because in centralized education systems including Malaysia public and private schools are different in the degree of freedom to apply innovative and entrepreneurial approaches at schools (Eyal and Inbar, 2003). Furthermore, contextual factors affect leaders' entrepreneurial leadership behaviour (Leitch *et al.,* in press). Only secondary schools were involved in this study because according to Eyal and Inbar (2003) and Eyal and Kark (2004) school principals' entrepreneurial orientation varies in different education levels due to the extent of the principals' autonomy and the school's organizational bureaucracy in the education system as well as the variety of students and their enrolling subjects.

Following previous research on the relationship between principal's leadership and school innovations (Eyal and Inbar, 2003; Park, 2012), we measured principal's leadership behaviour and school organizational innovativeness through the perspectives of teachers. A sample of 300 teachers were selected from 6 secondary schools. We selected the schools with the principals having more than two years of experience in leading that school. Majority of the teachers had also more than four years of teaching experience in the same school (n=193, 64%). These criteria ensured us the teachers had enough knowledge about the principals' leadership practices at the school. We randomly selected 50 teachers from each school. The participants were chosen from both daily academic (n=258, 85%) and high performing schools (n=38, 12%). Of the schools, 24.1% had 1500 to 3000 students. The majority of the teachers aged 41 to 50 (42%) years. The teachers were selected from both science (n=114, 38%) and social science subjects (n=186, 62%). Most of the teachers were female (n= 267; 88.4%) and had 8 to 33 (n=271, 90%) years of teaching experience. Regarding school principals' demographics, most of them were female (n=243, 80%), aged more than 51 (n=127, 42%) years and had undergone a management training (n= 177, 58%).

4.2 Measures

We used validated questionnaires to measure the constructs appearing in the structural model including school organizational innovativeness and principal's entrepreneurial leadership behaviour.

4.2.1 School organizational innovativeness

We measured school organizational innovativeness using the public school entrepreneurship inventory (PSEI) developed by Eyal and Inbar (2003). The instrument assesses teachers' perceived school organizational innovativeness (SOIN) by 11 items on the innovations implemented in the school and the changes they created in the school performances. Eyal and Inbar reported a high reliability (Cronbach's Alpha= 0.92) and validity for the items measuring school organizational innovativeness. A sample of the items is: 'The innovations that have been implemented during the last two years have led to an overall, system-wide change in our school'.

4.2.2 Principal's entrepreneurial leadership behaviour

We used Entrepreneurial Leadership Questionnaire (ELQ) developed by Thornberry (2006) to measure school principal's entrepreneurial leadership behaviour (ELB). The questionnaire consists of 50 items on five dimensions of ELB including general entrepreneurial leader behaviour (GELB), explorer behaviour (EXPB), miner behaviour (MINB), accelerator behaviour (ACCB) and integrator behaviour (INTB). The questionnaire measures GELB by 9 items, EXPB by 9 items, MINB by 7 items, ACCB by 11 items and INTB by 14 items. Yusof (2009) reported a high validity and reliability of ELQ (GELB) to measure entrepreneurial leadership behaviour of research university leaders in Malaysia (Cronbach's Alpha =

0.86). We changed some words in the questionnaire such as business to school in order to improve its validity to measure ELB of school principals. An example of the items is: 'The school principal challenges us to think about new and better ways to do our work.' The questionnaire also included the teachers' background information such as their age, gender, years of teaching experience, type of the school and number of enrolling students as well as the principals' age, gender, management training, and school leadership experience.

4.3 Data Collection procedure

The questionnaire was translated from English to Malay and back to English by two bilingual experts to ensure the accuracy of the translated questionnaire. To ascertain the appropriateness of the translated questionnaire, the experts tested the questionnaire against four criteria proposed by Pan and Fond (2010). First, each item was checked to ensure none of the concepts were deleted. Second, each item was tested for the accuracy and appropriateness of the vocabulary, grammar and usage of conventions. Third, each item was tested if it expressed the same concept as in English version. Finally, each item was checked to ensure that it does not contain any unfamiliar concept to the participants. The participants were asked to indicate their degree of agreement with the items of the questionnaire on a five-point Likert scale anchored from 1(strongly disagree) to 5 (strongly agree).

Participation in this study was entirely voluntary and all questionnaires administered were completed anonymously. Data collection was conducted during academic year 2011-2012. Permissions to conduct the research were obtained from Ministry of Education and the school principals by sending them a package including the research questionnaire and a cover letter which briefly explained the objectives of the study and described how the research would be of benefit to education in schools. Of the 330 questionnaires administrated, 300 were used in the final analysis (a 91% response rate).

4.4 Data Analysis

Due to the multivariate nature of the relationships among variables as well as the need to simultaneously assess the validity and the structure of relationship between the constructs under investigation, Structural Equation Modelling (SEM) was employed using AMOS Version 20 (Hair *et al.,* 2010; Kline, 2010). We adopted a two-step technique to analyse the data (Hair *et al.,* 2010). First, the structure and loadings of the factors to each of the two constructs in the model (school organizational innovativeness and principals' entrepreneurial leadership behaviour) were measured by performing a Confirmatory Factor Analysis (CFA) for each construct. Second, we examined the structural model and the hypothesized relationship between the latent constructs. Table 1 shows means, standard deviations, and correlations for the constructs in the model. The correlations among all the study variables were significant. Through the first step, we eliminated the items with factor loadings less than the 0.50 threshold. Of the eleven items measuring school organizational innovativeness (SOIN), seven were deleted. Six items from GELB, five items from EXPB, four items from MINB, seven items from ACCB and 11 items from INTB were also eliminated because of their low loadings to the factors. Therefore, ELB was explained by 17 items. Then, we examined the measurement model with the latent variables and the remaining items included in one measurement model.

Table 1: Means, standard deviations and correlations of study variables

Variables	Mean	SD	1	2	3	4	5	6	7
General entrepreneurial leadership behaviour (GELB)	29.52	5.49	1						
Explorer behaviour (EXPB)	33.22	6.65	.74**	1					
Miner behaviour (MINB)	26.25	4.68	.79**	.82**	1				
Accelerator behaviour (ACCB)	39.21	7.39	.84**	.84**	.84**	1			
Integrator behaviour (INTB)	53.44	10.62	.82**	.79**	.83**	.83**	1		
School organizational innovativeness (SOIN)	34.73	8.54	.39**	.50**	.43**	.46**	.41**	1	

** Indicate Correlation is significant at the 0.01 level (2-tailed).

5. Findings

In this section, we present the results for model fit indices for the measurement and structural models as well as hypothesized impact of principal's entrepreneurial leadership behaviour on school organizational innovativeness.

5.1 Model fit for measurement model

We examined the measurement model fit for the individual constructs including SOIN and principal's ELB and its components (GELB, EXPB, MINB, ACCB and INTB) to ensure the relationships among the latent and observed variables are

supported by the data. Table 2 presents the statistics obtained for the scale constructs and items. All of the items had loadings higher than the 0.50 threshold. The Cronbach's alpha also showed that all of the constructs scored higher than 0.80 indicating high scale reliability. Analysis of the measurement model developed with the constructs and the remaining items in this study indicated that the model fits the data well because x^2/DF was less than 2, all of the goodness of fit indices were higher than 0.90 and RMSEA was less than the 0.05 threshold (Byrne, 2010; Hair *et al.,* 2010) [Chi-Square (x^2=215.816); Degree of Freedom (DF=109); p=000; (x^2/DF= 1.44); goodness of fit index (GFI=.92); adjusted goodness of fit index (AGFI=.90); comparative fit index (CFI=.98); Bentler-Bone normed fit index (NFI=.94); Tucker-Lewis index (TLI=.97); and root-mean square error of approximation (RMSEA=.039)]. More specifically, SOIN was best described by four factors comprised of the significant changes the innovations implemented in the last two years created in the school and the role of the school principals in initiating innovative activities. The Cronbach's Alpha obtained for this section of the instrument indicated its high reliability to measure school organizational innovativeness (a=0.96). GELB is best explained by three items that measure behaviour of the principals in identifying different approaches to overcome obstacles, demonstrating an entrepreneurial orientation at work and listening to others to do things differently (Cronbach's Alpha=0.93). EXPB is best described by four items on motivating teachers to think of innovative ways, selling new educational ideas to upper managers, sharing the school status with teachers and selecting right people to capture the new opportunities (Cronbach's Alpha=0.93). MINB comprised of three items on analysing workflows, resources and processes to improve teachers' performances, expecting the teachers to solve cross school problems and supporting them to fight for changes and improvement (Cronbach's Alpha=0.81). ACCB is best explained by four items on behaviour of school principals in encouraging teachers to learn new skills, changing directions when results are not being achieved, motivating them to innovative thinking and allotting time to help them find ways for school performance improvement (Cronbach's Alpha=0.91). Finally, INTB included four items on sharing information on new educational trends and methods, encouraging school improvement suggestions, taking actions to implement the suggestions, keeping school focused on its core strategy and supporting new educational initiatives (Cronbach's Alpha=0.94).

The composite reliability indices (C.R) obtained for the study constructs were also greater than the 0.7 threshold that confirms the high reliability of the constructs (Table 2). Furthermore, all of the study constructs scored an average variance extracted (AVE), the portion of the construct variance explained by its factors, higher than the 0.5 thresholds indicating a high convergent validity for all of the study constructs (Hair *et al.,* 2010). The higher scores of C.R compared with AVE also supports the high convergent validity of the scale items. Additionally, we examined discriminant validity of the study constructs to ascertain all observed variables had the highest loadings to its construct and are not highly correlated with other items in other constructs (Hair *et al.,* 2010; Kline, 2010). Discriminant validity of the study constructs was measured by Maximum Shared Squared Variance (MSV) and Average Shared Squared Variance (ASV). As shown in Table 2, all of the MSV and ASV scores obtained in this study were less than the AVE scores except for GELB and MINB. The MSV for GELB was higher than AVE (0.68>0.64) and the MSV for MINB was equal to AVE (0.68). This implies all of the items in the scale had the highest loadings to their own constructs and only the items on GELB and MINB were correlated partially because of the conceptual similarities between the factors. This needs to be considered in order to improve the dicriminant validity of ELQ.

5.2 Model fit for structural model

To examine the impact of principal's ELB on SOIN, the two measurement models were incorporated into the full structural model and maximum likelihood technique was used to perform the analysis. We included observed variables in the structural model to show their impact on the factors that shape principal's ELB and SOIN (Boomsma, 2000). The model fit indicators for the full structural model supported a good model fit [x^2=290.088, DF=183, p=000, x^2/DF= 1.58, GFI=.91, AGFI=.897, CFI=.97, NFI=.93, TLI=.97, and RMSEA=.044]. As hypothesized, entrepreneurial leadership behaviour of principals had a significant positive impact on school organizational innovativeness (β=.52, C.R= 6.78, p=000). As Figure 1 shows, school principal's ELB contributes 44% of the variance in the SOIN. This indicates principal's ELB has a significant effect on the SOIN.

Table 2: Mean, standard deviation, factor loading, Cronbach's Alpha, C.R, AVE, MSV and ASV for entrepreneurial leadership and school organizational entrepreneurship items

Constructs	Items	Mean	SD	FL	*a*	C.R	AVE	MSV	ASV
General entrepreneurial leadership behaviour (GELB)	GEL6	3.57	.88	.81	.93	0.84	0.64	0.68	0.50
	GEL7	3.58	.85	.73					
	GEL9	3.70	.90	.87					
Explorer behaviour (EXPB)	EXP5	3.60	.89	.85	.93	0.89	0.67	0.51	0.41
	EXP6	3.52	.87	.82					
	EXP7	3.73	.88	.78					
	EXP9	3.54	.95	.82					
Miner behaviour (MINB)	MIN5	3.71	.83	.85	.81	0.86	0.68	0.68	0.47
	MIN6	3.76	.82	.82					
	MIN7	3.74	.92	.82					
Accelerator behaviour (ACCB)	ACC5	3.69	.89	.78	.91	0.88	0.65	0.59	0.44
	ACC6	3.63	.84	.79					
	ACC8	3.68	.79	.86					
	ACC9	3.55	.84	.80					
Integrator behaviour (INTB)	INT9	3.74	.87	.83	.94	0.90	0.75	0.62	0.46
	INT10	3.78	.87	.92					
	INT12	3.81	.82	.85					
School organizational innovativeness (SOIN)	SIN3	3.49	.94	.85	.96	0.91	0.72	0.26	0.15
	SIN5	3.39	1.01	.88					
	SIN9	3.60	.96	.83					
	SIN10	3.30	.96	.84					

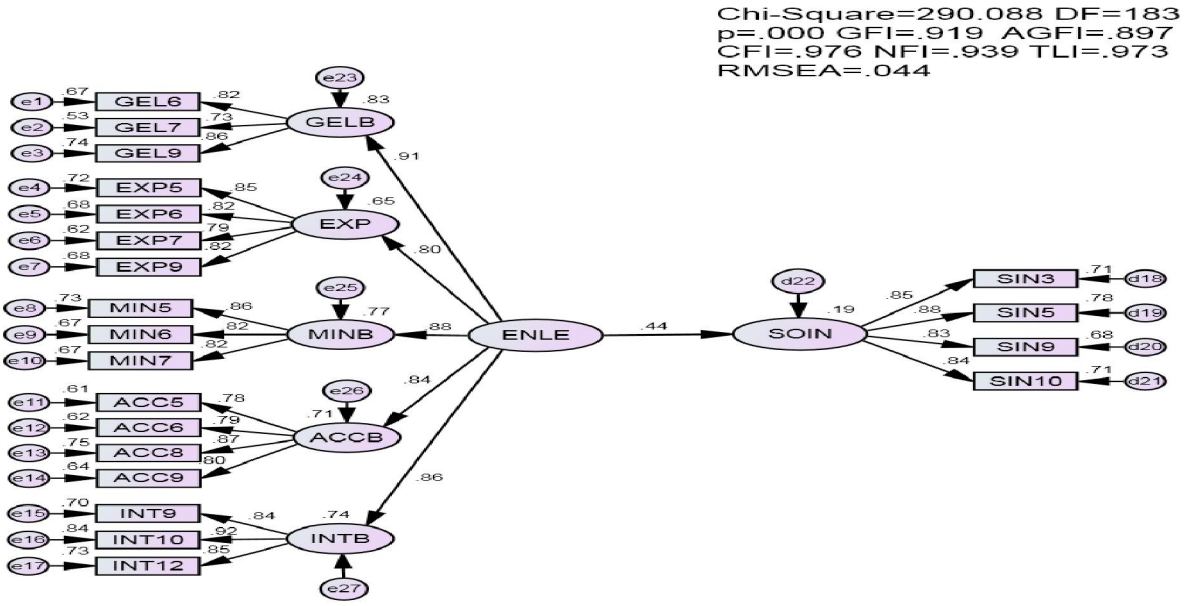

Figure 1. Structural model for school principal's entrepreneurial leadership behaviour and school organizational innovativeness with standardized regression weights

6. Discussion

The main purpose of this study was to examine the relationship between principal's entrepreneurial leadership behaviour and school organizational innovativeness through teachers' perspectives. Our findings revealed that principal's entrepreneurial leadership behaviour has a significant impact on school organizational innovativeness. More

specifically, principals' entrepreneurial approach to school leadership has an influential effect on the amount of innovations implemented and the extent of improvements they created in the schools. This emphasises the critical role of educational leaders' entrepreneurial leadership behaviour in creating an encouraging and supportive environment that fosters the process of innovations at educational organizations (Yusof, 2009) and specifically at schools (Lebusa, 2009; Xaba and Malindi, 2010; Park, 2012). Furthermore, it supports the significant impact of implementing entrepreneurial approaches and principles at both personal and organizational levels in improving school changes and innovations (Eyal and Inbar, 2003; Eyal and Kark, 2004; Hentschke, 2009). This study provides one of the first empirical findings in measuring the effects that different dimensions of entrepreneurial leadership have on improving school organizational innovations. Previous research mostly measured the influence of one dimension of entrepreneurial leadership behaviour on organizational innovations in educational contexts (Yusof, 2009). We extended this line of research by including all of the dimensions of entrepreneurial leadership in our measurement and structural models. Our findings also contribute to the limited literature on the relationship between entrepreneurial leadership and organizational innovation in educational organizations (Lebusa, 2009; Xaba and Malindi, 2010; Park, 2012) including Malaysia (Yusof, 2009).

The findings of this study have several implications for school leadership research and practice. First, the measurement and structural models emerging from this study may assist researchers in measuring entrepreneurial leadership and organizational innovativeness in educational contexts. Researchers can use the factors and items specified in this study as a framework to investigate schools' entrepreneurial approaches at both leadership and organizational levels. The models can also be applied to determine if entrepreneurial leadership has a significant influence on various aspects of teachers' performances such as innovations implemented in the classroom, job satisfaction and quality of teaching practices. They can be used to examine if such leadership significantly improves students' achievements. Furthermore, educators may use the models to measure entrepreneurial leadership among school principals in order to provide them with appropriate education and professional development programs to develop their entrepreneurial leadership competencies and equip them with the skills to implement such leadership to improve school performances (Berglund and Holmgren, 2006). Teacher educators can also apply the models to assess and develop such leadership behaviour in student teachers as the prospective school leaders.

7. Conclusion

This study revealed the critical role of principal's entrepreneurial leadership behaviour on school organizational innovativeness. Therefore, there is an urgent need for school principals to implement their tasks and roles based on entrepreneurial leadership if they are to foster the process of innovation in their schools (Lebusa, 2009; Xaba and Malindi, 2010; Park, 2012). To do so, entrepreneurial knowledge and competence should be developed in school principals. Principals' entrepreneurial leadership can be improved through engaging them in education and training programs (Kempster and Cope, 2010), observing the best practices of entrepreneurial leadership at educational settings (Kempster, 2009), providing them social interactive and reflective learning activities (Kempster and Cope, 2010) and more importantly giving them the authority and opportunity to implement entrepreneurial leadership approaches in performing their tasks. However, practicing entrepreneurial leadership can be challenging specifically in centralized education systems because principals have to change their traditional approaches to school leadership (Eyal and Inbar, 2003; Vecchio, 2003). Furthermore, they need to be encouraged and supported to implement entrepreneurial leadership behaviour in executing their tasks and roles. Policy makers can play key roles in providing an encouraging and supportive environment for school entrepreneurial leadership by developing strategies that facilitate practicing such leadership at schools.

This study provides a better understanding of the association between principal's entrepreneurial leadership behaviour and school organizational innovations. However, we focused only on public secondary schools. Future research can examine the relationship between entrepreneurial leadership and organizational innovations in private schools and other levels of education. Furthermore, we measured principal's entrepreneurial leadership behaviour and school organizational innovations through teachers' perceptions. Further research is needed to examine the factors through school principals' perspectives in order to provide a better knowledge about entrepreneurial leadership practices at schools. Future qualitative research can also be undertaken to investigate the challenges and difficulties that principals have to face in implementing their tasks based on entrepreneurial leadership. Identifying the pedagogical strategies and methods to develop principal's entrepreneurial leadership has also great

potential for future investigation. As our findings showed, there are a discriminant issue in measuring two of the components of entrepreneurial leadership (GELB and MINB). Future research should consider the high correlation between the two factors and refine the items on each factor in order to improve validity of the questionnaire. This emphasises the importance of developing a standard instrument to measure entrepreneurial leadership by future researchers.

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