

# LESSONS LEARNED FROM BUILDING THE EDUCATION REVOLUTION (BER) PROGRAM BY THE SOUTH AUSTRALIA CONSTRUCTION FIRMS

Nicholas Yorston<sup>1</sup> and Nicholas Chileshe<sup>2</sup>

<sup>1</sup> Partek Construction and Interiors, 160-177 South Road, Mile End, Adelaide, South Australia 5031, Australia

<sup>2</sup> School of Natural and Built Environment, Barbara Hardy Institute (BHI), University of South Australia, City East Campus, Adelaide, South Australia 5001, Australia

In response to the global financial crisis (GFC) in 2009, Australia undertook to mitigate the crises through the development of the National Building and Jobs Plan. Part of this plan for the construction industry was the commencement of Building Education the Revolution (BER) projects which comprised over one per cent of Australia's Gross Domestic Product (GDP), a massive outlay of expenditure to be delivered over a rapid time frame by a number of construction organisations. Despite the crisis, there have been limited studies conducted to document the effects of BER, and how construction organisations responded to the challenges. This paper aims to explore the lessons learnt from the strategies implemented by the construction organisations during that BER period. A mixed method approach was employed for the study. Data was collected from of 48 organisations using questionnaires, and two interviews were conducted to validate the findings. The following five lessons learned were identified: (i) the potential for high profits existed which brought about an increased requirement for careful resource management; (ii) the preservation of existing client base is crucial for post stimulus survival; (iii) threats and risks are brought about by stimulus and require consideration and planning; (iv) stimulus in the construction provides an opportunity to build an organisation's reputation; and (v) learning from the changes in competitor behaviour should be undertaken throughout stimulus; and by undertaking further research into strategic management, a sixth lesson was identified: (vi) organisations must re-address their business strategies post stimulus to adjust to their new external environment conditions. Given that there have been few stimulus implementations in the South Australian construction industry; the identified successful strategies based on the lessons learnt from the BER could assist construction organisations in undertaking and maintaining work post stimulus, despite the cyclic nature of the industry. The research was localised to the South Australian construction industry.

Keywords: South Australia, organisational learning, global financial crisis, stimulus package.

## INTRODUCTION

The Building the Education Revolution (BER) program comprised over one per cent of Australia's Gross Domestic Product (GDP), a massive outlay of expenditure to be delivered over a rapid time frame. According to Althaus (2012), some 10,500 building projects were approved for 7,900 schools within seven months of the Australian

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<sup>2</sup> nicholas.chileshe@unisa.edu.au

government's decision to establish the program. The same study by Althaus (2012) established that this rapid injection of money through school building development was an intentional approach implemented through the lessons learnt from the 1990 recession stimulus.

As the BER projects consisted of simple projects ranging from \$0.25m to \$3.0m in size, a large proportion of these projects with few exceptions, were undertaken by Tier 2, 3 and 4 builders as stated in the BER Task Force Interim Report 2010. Therefore it can be concluded that the BER program was specifically aimed at construction companies operating in the Tier 2, 3 and 4 levels of the Construction Industry throughout Australia. However in 2013 the most of, if not all the BER projects had been completed and, according to the Australian Construction Industry Forum (2013), those sectors exposed to the BER scheme would experience a decline in output. For example, it was envisaged that in South Australia's non-residential construction sector, the current slump would continue into the next decade with little change. This had left the sector in a position where work was scarce and tendering became highly competitive. The upshot of this scenario and forecasted by the Australian Construction Industry Forum, (2013), was that there was never been a more important time for business involved in the construction industry to understand and forecast work over the next 10 years.

While the Australian government should be commended for measures undertaken during the global financial crisis (GFC) in 2009, such as the development of the National Building and Jobs Plan, the short term fix of fiscal stimulus aimed at construction industries posed great risk to contractor's inexperience in dealing with the associated problems and follow on effects. As observed by a recent study conducted by WT Partnerships (2013), within the context of South Australia, there continues to be relatively few public sectors projects as compared to the pre-BER period and the financial problems of the State Government are regularly aired in the media (WT Partnerships (2013, pg. 8). The observation above calls for further exploration and determination of the success of the BER and its effects on the wider economy. While previous research has been undertaken to establish the effects of the BER across a number of Australian states (Australian Government, 2010), the shortcomings associated with those studies were that the research was conducted either during the BER or soon after the completion of the BER project. This approach had its limitations as the full extent of these effects was not known although it's acknowledged that the end of a project is consequently the end of collectively learning (Schindler and Epper, 2003 pg. 220). Secondly, the studies failed to investigate the effects of the BER on construction organisations other head contractors. It should be noted that the construction industry in South Australia is made up of several types of organisations of various sizes including architects, consultants, head contractors, sub-contractors and suppliers.

There is therefore, a need of exploring and understanding the full effects of stimulus packages such as the BER on the South Australian construction industry. The theoretical underpinnings of this study is based on 'organisation learning' and 'strategic management' principles and concepts which would require further examination to provide a strategy which a construction organisation can implement during future stimulus package to create a sustainable competitive advantage post stimulus. The present study is aimed at filling the knowledge gap by conducting a survey among the stakeholders within the South Australian subcontracting sector. It is

aimed at exploring the lessons learnt from the strategies implemented by the construction organisations during that BER period.

The rest of the study is structured as follows: The following section presents and summarises a review of the literature on economic stimulus and the BER projects. Following the review is a summary and identification of gaps in the impact of the GFC and relevance of BER knowledge. This is followed by the mixed methods methodological approach adopted for this research study. An explanation of the statistical methods employed for the quantitative part of the study and associated techniques for analysis of the qualitative data, as well as interpretation of the findings are presented. The final section addresses recommendations made and conclusions.

## **THIS SECTION SHOWS SOME AVAILABLE STYLES**

### **Economic stimulus and the BER**

This section seeks to explore and review the linkages between economic stimulus and BER. Prior to exploring the linkages the following definition of ‘economic stimulus’ is highlighted: According to Pettinger (2010), economic stimulus involve a government attempting to boost the economy out of a recession. A good example of how the government can increase spending stimulus could be through the National Building and Jobs Plans and specifically the BER as undertaken in Australia. The same study by Pettinger (2010) identified the following two mechanisms by which the stimulus packages could be implemented as through expansionary monetary policy or expansionary fiscal policy. Drawn upon international examples from Canada, the construction industry in Canada followed a similar economic pattern to Australia after the GFC. According the Construction Sector Council (2009) study, stimulus targeted building design that would utilize a wide range of materials which in turn generated jobs in other industries. Like the Australian stimulus package, this package set out to impact local economies across the nation by injecting cash and improving employment.

### **Lessons learnt within the construction industry**

There is a plethora of ‘lesson learned’ studies in the construction industry such as measurement tools for capturing lesson learnt in form of project reviews (Kululanga and Kuotcha, 2008; Fuller *et al.* 2011); Barriers to conducting lessons learned in terms of capturing the knowledge lessons learned (Collinson and Parcell 2001; Carrillo *et al.* 2004; and Schindler and Eppler 2003); as well as studies highlighting the benefits of lessons learned such as the main sources of knowledge in construction industry (Rezgui *et al.*, 2010), alongside recorded documents, experiences and interactions. However, despite the benefits, a recent study by Shokri-Ghasabeh and Chileshe (2014) aimed at identifying barriers to effectively capture lessons learned in Australian construction industry established that, there is a lot to done to encourage and convince construction organisations to adopt lessons learned. From the review of the literature, it could thus be argued that while lessons needed to be learnt in the South Australian construction industry as to how fiscal stimulus such as the Building Education Revolution affects organisations and how they should adapt to the volatile economic conditions stimulus packages create, the barriers and appropriate measurement instruments associated with capturing lesson learned should be taken into account when examining the BER projects. Furthermore, lessons also needed to be learnt as to how construction organisations can survive in the depressed construction industry post stimulus.

## RESEARCH METHOD

To explore the lessons learnt from the strategies implemented by the construction organisations during that BER period, the following mixed methods approach involving quantitative methods (through survey questionnaires), and qualitative approaches obtained through two interviews as conducted were employed in the study. The aim of the interviews was to validate the findings.

### Measurement instrument and pilot study

The questionnaire distributed to the South Australian construction contractors (SACC) comprised two distinct sections as follows: The first section of the questionnaire was composed of 5 questions. The demographics question included the categorical variable, nominal in nature and associated with the business type of respondents. The remainder of the questions were dichotomous in nature that asked for a 'yes / no' response, and sought the background information on the BER. The second section was designed to identify the strategies adopted by the respondents during BER, and ascertain the impact of post BER (i.e. turnover, planning). The majority of the questions were dichotomous type, as is associated with nominal data, whereas two questions associated with management of the BER projects, lesson learnt and strategies post BER project required open ended responses and the BER impact question was measured using a 3 Point likert scale (where 3 = Agree, 2 = Do not agree, and 1 = Unsure). According to Champney and Marshall (1939 cited in Matell and Jacoby, 1971), there are different schools of thought on whether using a higher number of points on the Likert scale increase the validity and reliability of the instrument. The same study suggested that the optimal number of steps is a function of the conditions of measurement. Given that the need to simplify the options for the respondents, and only one question required a Likert type of response, this study adopted a Likert scale of only three points as this wouldn't affect the overall reliability and validity of the measurement instrument. The data was subjected to frequency analysis using the *Statistical Package for Social Sciences* (SPSS) computer program. As opined by Forza (2002), this type of analysis is relevant and generally obtained for nominal variables when the objective is to ascertain the number of times various subcategories of certain phenomenon occur (Forza, 2002, pg. 182). A pilot survey was distributed to two professionals working within the South Australian contracting organisations. The professionals had vast experience within the industry, and the main purpose of the pilot study was to ensure that it could be completed in minimal time and that no obvious or irrelevant questions were included. Forza (2002) outlines the justification for this approach, and highlights the specific role that colleagues and industry experts provide such as the prevention of inclusion of obvious questions and determining whether the questions accomplishes the objectives.

### Characteristics of the sample (quantitative study)

The targeted respondents were drawn by the probability strategy of 'random sampling' from a list of sub-contracting organisations that were available to the authors by virtue of tenders submitted. While it was not known 'a priori' the actual number of organisations that had provided products or services for BER projects, it was assumed that this would be determined by the survey. In addition, those targeted had been operational for more than five years, and had experience providing services for BER projects. Four hundred and six questionnaires were sent out by post and 48 were returned. This resulted in an overall response rate of 11.8%. While this number might be deemed as small when compared to the overall population of over 1000

organisations in South Australia, in comparison with previous construction related study undertaken in South Australia (Newton and Chileshe, 2012), this was deemed to be adequate. For example Newton and Chileshe (2012) used a sample size of 75. Similarly, when compared with previous studies published outside Australia such as Lim and Ling (2012); Yong and Mustafa, (2012), this sample size was adequate, and further complimented by the qualitative data. On the contrary, the study by Lim and Ling (2012) only had a sample size of 32 respondents whereas Yong and Mustafa (2012) employed a smaller sample size of 14 respondents. In both studies, only the quantitative approach was employed. Furthermore, as asserted by Coviello and Jones (2004 cited in Yong and Mustafa, 2012), if high-quality survey data are obtainable from smaller sample drawn using well-developed selection criteria, meaningful findings can still be generated (Yong and Mustafa, 2012, pp. 547). Table 1 provides a background of the respondents according to the type of the organisation. As indicated in Table 1, the majority 62.50% (30) of the respondents were employed by a subcontracting organisation, followed by 33.33% (16) drawn from the head contractors. The significance of the respondents being drawn from the subcontracting sector was through provision of valuable data which had not previously been researched. The obvious omission of professionals drawn from the 'architectural firms' and 'government departments' was largely due to the limited number of questionnaires sent to that group. While this result might be disappointing, however it poses no great impact on the results of the survey.

*Table 1: Profile of study sample (organisational type)*

Type of organisation*	Frequency	%	Cumulative
Subcontractors	30	62.50	62.50
Head contractors	16	33.33	95.83
Engineering consultant	2	4.17	100.0
Total	48	100.0	

**Notes:** \*The survey document also has options for selecting the 'Government department' and 'Architectural firm'

Architecture firms and government departments make up only a small proportion of the South Australian construction industry.

### **Study protocol (Qualitative approach)**

The interviews set out to achieve a greater understanding of the strategies implemented by organisations during the BER as well as the lessons learnt as a result of those strategies. As stated by Brinkmann and Kvale (2009), the main aim of the conducting interviews was to understand the research issues from the interviewee's perspective in order to discover information from participants prior to scientific interpretations. As this study was focussed on determining the professional's experiences over the last five years (post BER), ultimate success of the interviews were dependent on building trust between the researcher (Fellows and Liu, 2008).

#### *Profile of interviewees*

The profile of the two interviewees according to the designation, and brief description of their respective organisations are shown in Table 2. As can be seen from table 2, although the two organisations offered completely different services, the effects and risks their organisations were exposed to during the BER are very similar. Consequently, many of the strategies which were and could have been implemented apply to both organisations.

Table 2: Profile of Interviewees headings

Interviewee	Position	Description of organisation and interviewee
A	Managing director	Tier 2* type of Head contracting organisation: Had built approximately 23 BER projects and employed more than 45 people during the BER Implementation process. However, the number of employees had since decreased to 30 post BER
B	Senior estimator / construction manager <sup>1</sup>	The interviewee has been actively involved in the South Australian construction industry for over 20 years. The organisation contributed their services to 12 BER projects.

**Notes:** <sup>1</sup>At the time of BER, the interviewee was employed by a tier one electrical organisation operation as a subcontractor for projects ranging in size from \$(AUS) 500,000 to \$50m; \*Classification of Tier 2 organisation implies one that is able to bid for projects worth up to \$10m in contract value.

## SURVEY RESULTS AND DISCUSSION

### Experience with BER Projects

To ensure that the respondents had a first-hand experience with BER projects, and were familiar with the stimulus package, one of the questions posed was whether the organisation that the respondents had worked for provided services to the BER projects. The majority 92% (44) of the participants provided services to BER projects. The implication of this finding is that it ensured that the results from the study and participants were accurate and informative.

### Impact of the GFC and BER on the Private Sector

Many effects of the BER solely revolve around the diminishing input of the private sector. The majority 87.5% (42) of the constructional professionals agreed that the private sector of the no residential constructions was yet to recover whereas an equal number comprising the minority 6.25% (3) did not agree and were 'unsure'. This finding is consistent with literature as evidenced from the recent report by the WT Partnerships (2013). While the study by WT Partnerships (2013) was aimed at the public sector, there are many underlying effects that the failure of the private sector has had on construction organisations. The review of the literature demonstrated that in order for organisations to adjust to the effects, redundancies were made and were going to continue. For example, the survey found that the majority 56.3% (27) of the respondents were employed by an organisation that had made redundancies over the past 18 months. While the review of the literature implied that government stimulus was the cause of these redundancies, they are many other factors which might have contributed to the sudden decrease in construction employment.

### Construction professional's perception on the linkages between 'redundancies' and 'BER'

In order to explore the linkages between associated effects of BER and redundancies, the following question was posed: "If yes [to BER as the cause of redundancies], do you think redundancies were required to adjust decreased availability of work and fierce competition created by the completion of the BER?". The majority 77% (37) of the respondents believed that redundancies in their organisations were caused by the decrease in availability of work largely due to the completion of the BER stimulus package. The emergent implication of that finding is that, the sudden decrease in post stimulus has had a major effect on the level of employment in construction organisations. Furthermore, the literature review highlighted that for every \$1m spent

in the construction industry, seven jobs would be created whilst up to 37 jobs outside the construction industry could be created. This suggests that there were [is] potential for the construction industry to have the reverse effect post stimulus when the demand for construction is completed.

### Strategies implemented during the BER

Table 3 summarises the strategies adopted by the organisations during the BER. As can be seen from Table 3, just half (52.08%) chose the second strategy where organisations selectively chose BER projects whilst operating within their capabilities. On the contrary, 22.92% (11) of the organisations expanded to increase turnover. The general perception that was found through the review of the literature was that most organisations expanded to unsustainable levels. Yet, it is interesting to note that the most dominant strategy found through this study and survey was ‘to operate within capabilities of the businesses.

Table 3: Strategies adopted during BER

Strategy	Frequency	%
1. Attempted to secure many BER projects, increase no of employees, increase resources an turnover	11	22.92
2. Selectively chose BER projects and worked within organisational capabilities	25	52.08
3. Stayed away from the BER projects all together and focussed on private sector clients	7	14.58
4. None of the above	5	10.42
Total	48	

One possible explanation for this strategy was that it posed less risk. A recent study (WT Partnerships, 2013) highlighted the linkages between the unsuccessful strategies and poor management creating the “roller coaster” turnover during and post the BER.

### Findings from the qualitative study

The 16 questions as posed to the interviewees comprised the following two groups: (i) six ‘during BER’ related; and (ii) ten ‘post BER’. The six questions associated with ‘during BER’ ranged from the business values leading up to the GFC; strategies adopted; management of HRM; aims and objectives towards the BER; to perceptions about profit margins. The ten ‘post BER’ questions evolved around planning for decreased activities in the private sector of non-residential construction; sustainability of strategies and values; identification of threats and risks; valuable lessons learnt to perceptions of whether their competitors had changed.

*Lesson one: The potential for high profits and the increased requirement for careful resource management* - Interviewee A’s organisation attempted to treat the BER as a bonus to their normal workload and turnover whereas Interviewee B’s organisation did not experience profits of 20% in the second round of BER, they however implemented a careful strategy to prevent any unsustainable growth. As a result, Interviewee B’s organisation still grew by around 15% in terms of employment. The second lesson was “*The preservation of existing client base is crucial for post stimulus survival*”. One of the most difficult challenges that the head contractors, consultants and architects faced with during the BER was attempting to maintain the private sector clients.

*Lesson three: Identifying the threats and risks construction organisations were exposed to during and post the BER* - The emergent risks were the amounts of demand

for construction [Interview A] whereas, Interviewee B identified ‘working outside their capabilities’. On the contrary, the threats to the organisations post stimulus were deemed as quite opposite with excess supply and insufficient demand as the main drivers for increased competition.

Lesson four: *A chance to build an organisation’s reputation* - Interviewee A identified the SA construction industry as one of the most difficult construction industries to operate in. “We could successfully manage the construction of 99 projects, however if we’re unsuccessful in one, our reputation could be ruined”. Notwithstanding that observation, according to Interviewee A: “Many organisations focused on building as many BER projects as possible which comprised their quality and resulted in a loss of reputation”. Interviewee B shared the same sentiments and further observed that the BER provided an avenue for building reputations, valuable long term relations.

Lesson five: *Learning from the changes in competitor behaviour* – During the stimulus packages, new programs such as the BER resulted in new competitors entering the market. As observed by Interviewee A, the head contractors were under pressure from both categories of contractors (smaller and larger). Interviewee A agreed that learning off your competition had proven to be just as important and noted: “I have seen many builders pushing the limits and have grown too big too fast. You must know your limits and learn off the organisations that break theirs”. The fifth lesson should be undertaken throughout stimulus. By undertaking further research into strategic management literature, a sixth lesson was identified as follows:

*organisations must re-address their business strategies post stimulus to adjust to their new external environment conditions.*

## LIMITATIONS

While the study makes several contributions to strategic management through examination of theoretical concepts such as ‘resource based view’ which informed the examination of the ‘external’ and ‘internal’ environment analysis, and secondly, contributions to ‘other organizational learning strategies’ underpinned by the ‘experienced based and outcome based learning’, some limitations should be noted. This first limitation relates to the ‘localisation’ of the research to the South Australian construction industry, and therefore the research findings may not reflect other Australian States and Territories. Future studies should be extended to construction organisations across Australia as well as employing larger samples. The second limitation relates to the lack of consideration of a number of factors that might have contributed to the failure of the private sector of non-residential construction to recover. In the main, these included the following: (i) the end of the mining and minerals boom; (ii) the political uncertainty of the 2013 federal elections; (iii) interest rates and reduced borrowing capacities; and (iv) other economic conditions other than the stimulus package which has affected the construction industry over the past five years (2009 – 2013). The third limitation was associated with the sample size of the interviewees. However, despite this shortcoming, the inclusion of organisations as such Head contracting provided some additional insights in validating the empirical findings. Future studies should employ a larger sample size of interviewees. The study further acknowledges that the strategies implemented by construction organizations, often takes into consideration a large number of variables and external effects, and that this study was limited to considering only those strategies which have been largely influenced by only the implementation of fiscal stimulus in the industry.



## CONCLUSIONS AND RECOMMENDATIONS

The study explores the lessons learnt from the strategies implemented by the South Australian construction organisations during that BER period. The key emergent findings established from the study were as follows: (1) The private sector significantly decreased during the stimulus implementation and was yet to recover in South Australia; (2) Redundancies were made post stimulus in order for organisations to adjust to the decrease in workloads largely created by the completion of stimulus an excess supply of construction organisations; (3) The BER is largely responsible for the increase in competition post stimulus; and (4) The price of construction has now fallen, with the decrease in margins in turn creating project quality problems for subcontractors and head contractors attempting to operate with low margins. However, the survey further uncovered that all organisations did plan for the decrease in the private sector post stimulus. Previous research undertaken emphasised that not enough construction organisations planned for the forecasted slump, however this was clearly wrong. Some recommendations are further proposed: The major shortcoming identified in this study was the lack of strategic management (see Table 3) implemented by construction organisations post stimulus. The construction industry seems to be in a depressed state where organisations are waiting for the demand for construction to increase. Against that background, it is recommended that construction organisations There is a need for further research to explore the relationships between the identified must readdress their strategies focussing on the core aspects of creating a sustainable competitive advantage in construction organisation. Future studies could then be extended to examining how organisations in other industries achieve this, and testing the applicability of those best practices strategies within the construction industry organisations.

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