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USE OF BUSINESS CONTINUITY MANAGEMENT TO MITIGATE OPERATIONAL RISK: THE CASE OF THE AL-THUWAIRAT CONSTRUCTION COMPANY, SAUDI ARABIA

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ABSTRACT: *Construction companies face a number of operational risks in their projects, ranging from the risks of changing weather conditions, to the problem of insufficiently skilled staff (Cohen & Palmer, 2004). It is essential to ensure that all of these risks are effectively identified and controlled by the risk management division. This dissertation conducts a case study of a construction company in Saudi Arabia, the Al Thuwairat Construction Company, which aims to evaluate the extent to which the company's model of business continuity management is effective at managing operational risk. The research has been carried out based on a mixture of secondary research, a survey conducted with the company's employees, and semi structured interviewees with people working in the company's risk management division, in order to explore this research issue. The findings of the research suggest that, although the company's operational risk management is effective given that it controls many of the risks with the use of legal contracts, it engages in the systematic identification of risks at the beginning of projects, and it also uses the expertise of a range of personnel who are skilled in risk identification and measurement, there are also many weaknesses. These include the fact that there is no systematic methodology for assessing the effectiveness of risk management, and that there is a lack of communication between the risk management division and the rest of the organization. A series of practical recommendations are made in the dissertation to increase the effectiveness of risk management within this company and in companies in the construction industry in general.*

KEYWORDS: Al-Thuwairat, Business Continuity Management, Risk.

INTRODUCTION

Research Background

Driving or crossing the road contains a certain level and type of risk. In fact, life is filled with risks and challenges. Hence, the purpose is to reach the destination and achieve the goal by overcoming and preventing any incidents that can be the source of risk. Similar is the case of businesses. However, in many cases, the risks other than operational risk, such as risks resulting from the market volatility and other financial risks, arise from uncontrollable factors (Uher and Toakley, 1999). An increasing focus has come to be placed upon the importance of business continuity management within companies since the terrorist attacks of September 11th 2001. This is also due to the various natural disasters which have taken place in recent years (such as the July 2007 terrorist attacks on London's Tube system and the negative impacts of Hurricanes Rita and Katrina in 2005) and which have had a severe effect on businesses which did not have adequate business continuity management frameworks in place (Krell, 2006). According to Matthys (2010), the frequency of natural disasters and their impact on unprepared companies has increased in recent years. The interconnected nature of businesses as a result of

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globalization means that disasters which happen abroad may have a severe impact on companies as they are transferred along the supply chain. In addition, the increasing reliance on the internet by many companies and the consequent growth of information systems means that the failure of any critical systems which are designed to take place in the case of an unforeseen emergency is likely to have a significant negative impact on business, which was certainly not the case before the advent of such systems (Graham & Kaye, 2006). This has made it more important than ever to ensure that suitable business continuity management frameworks are in place. However, in spite of the growing need for business continuity management, research suggests that the majority of companies do not have effective systems in place that can ensure continuity.

The need for effective risk management and business continuity management is particularly important in construction companies. Construction projects are very complex, and are always unique featured projects, where the stakes come from a number of different sources of risks and uncertainties, many of which are not under the participants' direct control (Rahman and Kumaraswamy, 2005). Construction projects often have a bad reputation of failing deadlines and targets in terms of cost and time, resulting in financial losses (Rahman and Kumaraswamy, 2005). This makes it necessary to have a risk management system in place to avoid risks and financial losses. Risk management aims to ensure the speedy recognition of sources of risks and establish a transparent method of risk evaluation, reporting the identified risk and sources of risks, and action planning (Royer, 2000). The importance of ensuring that companies have suitable business continuity management plans in place has also been recognized by many national governments and public-sector organizations. For example, in the UK, construction companies now have to provide evidence that they have a clear, effective business continuity plan in order to win contracts within the UK public sector. The importance of business continuity plans for businesses has become even more important since the coalition government came to power, with all UK businesses which hope to win government procurement contracts now being required to demonstrate that they are certified to the business continuity standard of BS 25999 (Lingwood, 2010).

Motivations for research

The ultimate aim of risk management is to overcome the risks and or to reduce them to an acceptable level. "Business continuity management (BCM) is the development, implementation and maintenance of policies, frameworks and programs to assist businesses to manage disruptions and risk, as well as build the company resilience" (Gibb and Buchanan, 2006). "Resilience comes from tackling the likelihood as well as the consequences of disruptive events. Therefore, it is important to have both effective business continuity planning frameworks in place."

Planning for business continuity aids in the prevention, preparation for, response to, management of, and recovery from the consequences of an issue or damaging event which may result in a financial loss to the company (Gibb and Buchanan, 2006). The importance of business continuity management is supported by empirical research, which finds that 93 per cent of those companies which lose access to their critical information systems for a period of longer than ten days are significantly more likely to declare bankruptcy. Findings also suggest that those businesses which do not have a business continuity plan in place and subsequently suffer a 'catastrophic loss of data and equipment' will usually go out of business up to 24 months after the loss has taken place (Kahan, 2005). However, previous studies do not provide empirical evidence about the application of BCM in construction companies. Hence, this aims

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to go some way to assessing the applicability of BCM for the purpose of operational risk mitigation in the Al-Thuwairat construction company, Saudi Arabia.

Aims and objectives

The aim of this study is to critically assess the use of BCM for the purpose of operational risk mitigation in the Al-Thuwairat construction company, Saudi Arabia. In order to achieve this aim, the following research questions were prepared, which this paper will aim to answer:

Research Questions:

1. What are the levels and types of operational risks inherent in the Al-Thuwairat construction company of Saudi Arabia?
2. What are the methods which are used by the Al-Thuwairat construction company to manage these risks?
3. To what extent, and how effective, are the business continuity management practices which are being applied to mitigate operational risks in the Al-Thuwairat construction company?

RESEARCH METHODS

The research approach found to be appropriate for this study is 'phenomenological' and comprises of qualitative and subjective analysis that seek a rich understanding of particular situations.

The research philosophy for this study combines positivism "working with an observable social reality" to produce "law-like generalizations..." and constructivism that is focused on the "collective construction of social phenomena. While largely deductive, aligned to social scientific research the study also involved complimentary inductive research to confirm, or refute, existing theories and generate new ones.

Both primary information, generated from the company employees and management, and secondary data, generated from existing literature and documentations, were used in this study. Despite being widely considered adequate for acquiring beneficial information, surveys can produce inaccurate or misleading data. To avoid this, the second-stage interviews, for managers and selected first-stage respondents, will be semi- structured in order to ensure that comprehensive and accurate data arises but is limited to the most significant issues generated from the first-stage analysis. By employing questionnaires, semi-structured interviews and a literature review, the study generates data from multiple sources, which is a technique of 'triangulation' that avoids misleading and biased data (Collis and Hussey, 2009, p. 85).

All the interviews were organized after gaining the consent of the respondents; names of the interviewees will not be disclosed for the purposes of confidentiality (Collis and Hussey, 2009). In order to avoid misinterpretation in the data analysis, supervisor guidance played a vital role. Moreover, where necessary, respondents will be re-contacted, and findings will be compared with the key respondents' interviews (Collis and Hussey, 2009).

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The questionnaire was sent in electronic form to a list of a hundred employees who were randomly selected from the list of employees in the HR division. Of these 100 employees, a total of 62 respondents fully completed the questionnaire (a response rate of 62 per cent). The semi-structured interviews were conducted with five members of the risk management department – all of these employees had been working in the risk management department for more than five years. Three of the interviewees had only ever worked at Al Thuwairat, and the other two interviewees had worked in other companies in the industry before moving to Al Thuwairat. The interviews were all carried out on Skype – each lasted about 15 minutes, and each of the interviews was recorded and then transcribed. The interviews, which were all carried out in Arabic, were then translated into English.

Company overview

The Al Thuwairat Company is located in Alzulfi City within Saudi Arabia. It was founded in 1988 and is very well known in the region it operates within. The company specialises in the construction of a range of residential projects including luxury villas, residential complexes, farms and palaces, although the company has also conducted a number of construction projects for the public sector, including health centres and schools (Al Thuwairat, 2013). The fulfilment of the company's contracts is made possible with a range of water tankers, loaders, trucks and other types of heavy-duty machinery and equipment. The company also recently acquired a petroleum services station, which performs the role of financing and ensures that the heavy machinery and the cars that operate within the company's fleet have access to cheaper fuel (Al Thuwairat, 2013). Other additions to Al Thuwairat's portfolio include a variety of subsidiary shops which specialise in the production of blacksmithing, aluminium and carpentry works. The company also prides itself on its corporate social responsibility and on the contributions that it makes to society in financial and moral areas, as well as its participation in various charitable works within the community (Al Thuwairat, 2013).

The company currently employs 157 workers and 120 partner workers – during the past six months, it has established a total of three schools and six villas, with miscellaneous works including the completion of carpentry, electricity, blacksmithing, flooring, plumbing and tiling projects for individual clients (Al Thuwairat, 2013). The company has also started to invest in a model of business continuity management to measure the risks it faces in its construction projects as well as ensure the secure continuity of the business during such crises.

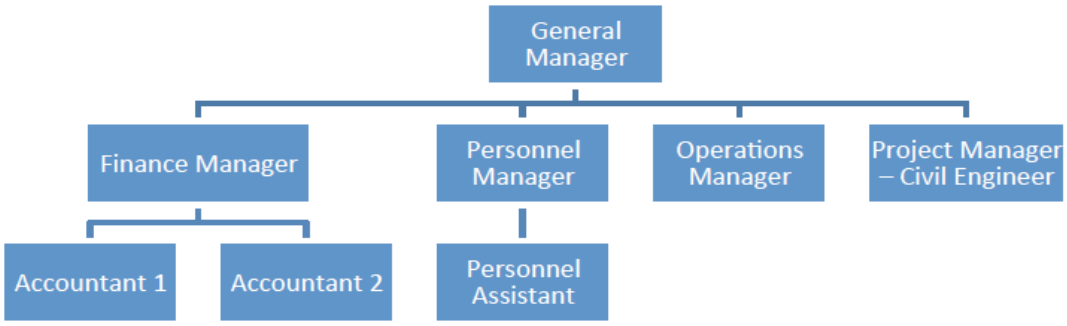

Figure 1: Organizational structure of administrative staff (Al Thuwairat, 2013)

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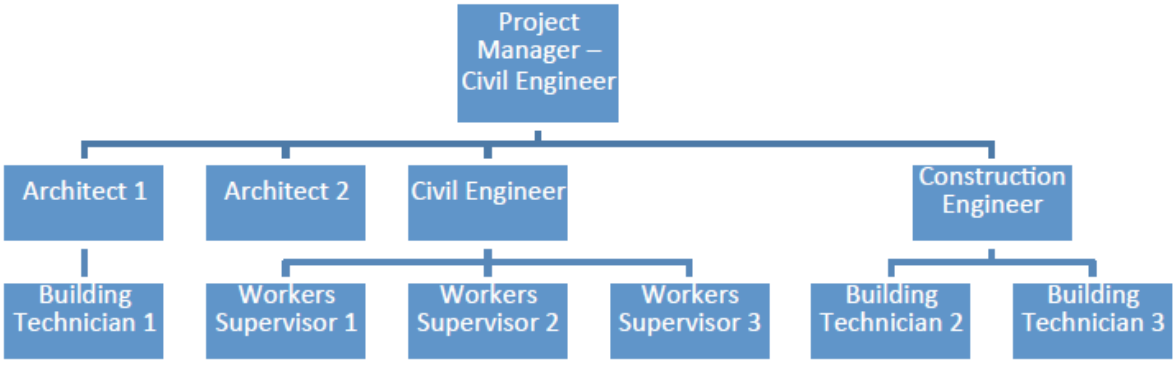

Figure 2: Organizational structure of technical and engineering staff (Al Thuwairat, 2013)

The company has also experienced significant financial growth during the past two years. As can be seen in the income statement displayed on the following page, the company has experienced a 7.9 per cent increase in its adjusted gross profit between 2010 and 2011, and an 18.7 per cent increase in its net profit.

Table 1: Income statement for the year 01/01/2011 to 31/12/2011 (Annual Report, 2011

List	Note	SR 31/12/2010	SR 31/12/2011
	Note		
Revenues	(8)	18,991,085	21,868,261
	Note	-	-
Deduct: Cost of Revenues	(9)	11,728,191	14,022,613
Gross Profit		7,262,894	7,845,648
Other Income		32,848	24,799
Adjusted Gross Profit		7,295,742	7,870,447

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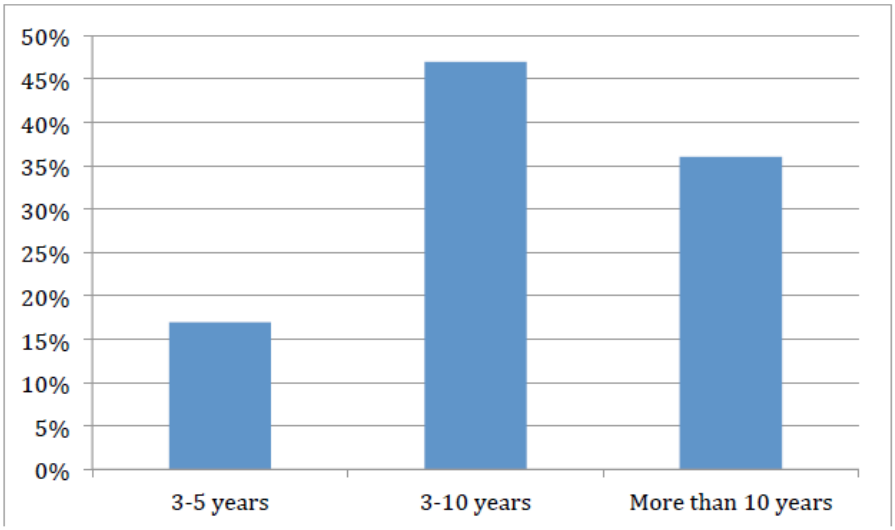
	Note		
General and Administrative Expenses	(10)	-2,049,085	-2,448,237
Discounts Allowed		-266,992	0
Bad Debts		-247,535	0
Prior Years Adjustments		-117,331	0
Premium Depreciation		-297,732	-297,847
Net Profit for the Year		4,317,067	5,124,363

What are the levels and types of operational risks in the Al---Thuwairat construction company, Saudi Arabia?



Question 1: How many years have you been working at the Al Thuwairat Construction Company?

The results of this question show that the majority of those who were surveyed have worked at the company for between 5 and 10 years. The number of employees who worked at the company for more than ten years was 36 per cent – the fact that the majority of those people who were surveyed had worked at the company for at least 5 years suggests that they are more likely to have detailed knowledge about how the company functions. They are therefore likely to give more accurate answers about the way in which the company manages its risk than if they had worked at the company for a shorter amount of time.

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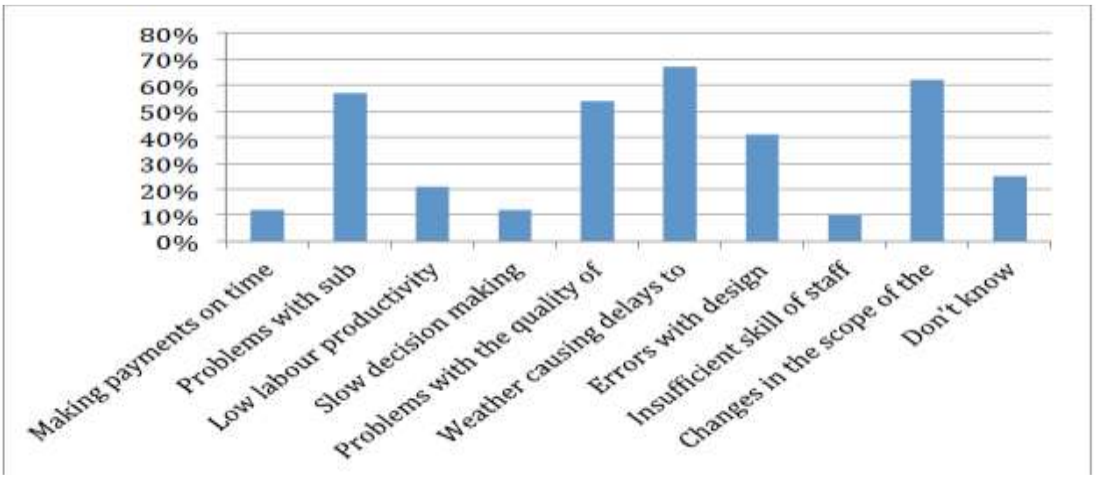

Question 2: What types of operational risks are there in the Al Thuwairat construction company?

The results of the survey suggest that the three most significant operational risks faced by Al Thuwairat are related to changes in the scope of the construction project, changes in the weather, which can cause delays to the project, and problems with sub-contractors. This is interesting because it suggests that the key operational risks the company faces are external in nature – in other words, the risks arise from changes which are caused by other people rather than being related to failings in the company's internal management. This might suggest that the management of risk within the company is very efficient. This suggestion is supported by the fact that the three least significant factors which the respondents identified as risks were making payments on time, slow decision-making and insufficient staff skill levels.

In contrast to the results of the surveys, the responses provided by the interviewees about the types of risks faced by Al Thuwairat were much more varied – in particular, it was suggested that there were significant risks which were associated with failures of planning, slow decision-making, the inexperience of contractors, poor labor productivity and problems related to payments and financing. However, Interviewees 2 and 3 did emphasize that the quality of the planning of projects which was implemented within Al Thuwairat was generally of a very high quality. As a consequence, the majority of operational risks which arose were either due to unforeseen factors such as changes in the weather or the quality of material, or to issues which were generated from other individuals, such as interference in the project by the owners and changes in previously agreed specifications. A further insight provided by Interviewee 2 into the nature of the risks which were faced was that, although significant efforts were made by the company's risk management division to identify all of the major risks during the early stages of a project, the precise nature of the risks which would arise were not always apparent until the project had actually begun. Therefore, it appears that the largest source of risks faced by Al Thuwairat in their construction projects are related to force majeure, and to issues beyond the control of the company. In this sense, the responses received within the interview appear to corroborate the results of the survey.

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What methods are used by the Al---Thuwairat construction company to manage these risks?

Question 3: What methods does the company use to manage its operational risks?

It is interesting to note that, in the results of the survey, the majority (34 per cent of those surveyed) did not know what methods Al Thuwairat used in order to manage its operational risks. This suggests that there may be an issue with the way in which the company communicates its risk management procedures to employees who do not work in that department. Aside from that, the answers provided by employees about different risk management methods were quite evenly distributed – 24 per cent of employees stated that contracts were used for the transfer of risks, while 21 per cent said that added costs and time were included in construction plans, and another 21 per cent said that specialist risk management personnel were hired. It would be interesting to know whether the employees who were able to provide answers to this question got this knowledge because they worked more closely with the risk management division. In other words, it would be interesting to find out the reason why some employees have a better knowledge of risk management techniques within Al Thuwairat than others.

All of the interviewees provided a rough consensus about the steps which are followed when a new project is embarked upon in order to identify the associated risks. According to Interviewee 1, "the most important step to effectively managing risk is to be able to clearly evaluate all the possible things which might go wrong and to do a what-if … in other words, if this thing happened, how would it affect the company? … How do we stop it from happening?" Interviewee 4 stated that this was not a one-off process and that the identification of risks was a continuously evolving process which was repeated if different factors of the project changed over time. Interviewee 5 clarified this by stating that there are different algorithms which are used in order to identify potential risks at the start of the project, but that qualitative methods of risk identification were also used. In particular, he suggested that one of the most effective ways of determining risks was through brainstorming– this was useful because "it means that those people who have more experience in the company can draw on that experience to suggest risks based on what has happened in the past… but at the same time, the fact that it is an open forum means that younger, more junior employees can also come up with suggestions of risks that might not have been thought of." It was suggested that the combination of both qualitative and quantitative methods of determining risks gave the process added strength.

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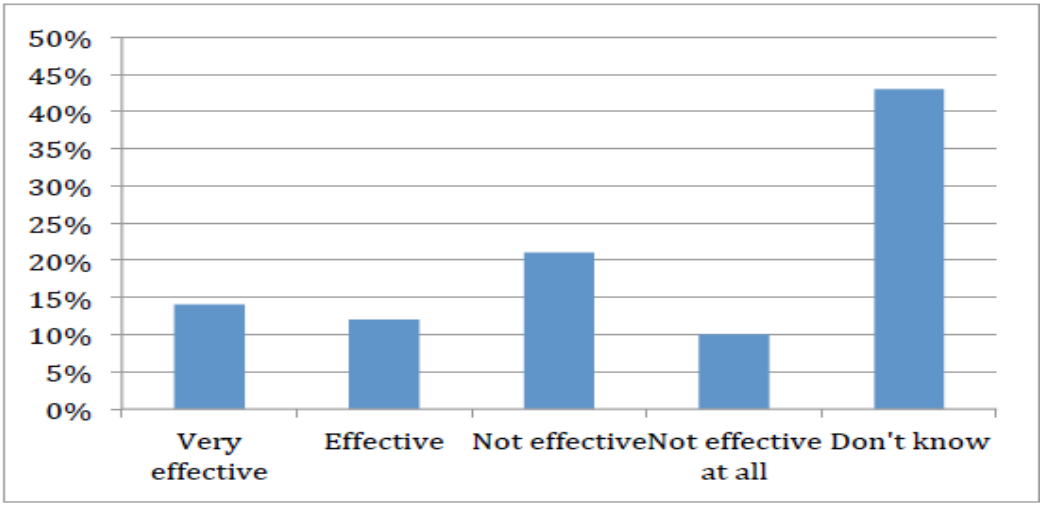
Interviewee 3 suggested that the precise risk management techniques which were used were directly related to the likelihood that the risk would occur – this was measured by the likelihood of the risk and the potential impact that it would have on the company. This was measured purely statistically using an algorithm which was developed based on the risks of old construction projects that the company had done. Interviewee 5 commented that "in the majority of cases, we make sure that we have the contracts in place to limit risks – for example, in the case of force majeure, we have contracts to make sure that our company only has limited liability. This is very important because we don't want to have to suffer as a company for things which are out of our control." When asked whether there was a set of standardized contracts which were applied to manage the risk of each construction project, Interviewee 5 replied, "it depends. We do have contracts which we use for every single project that we do – for example, we have contracts in place which we always use for force majeure because that is always a risk which is attached to every project that we take on, regardless of what industry it is in … but if the project is very specialized, so if it is a building or in an industry where we don't have much experience, or if it's with a foreign company, then we'll call in our lawyers and they'll prepare us a set of specialized contracts." Interviewee 1 expanded on this by pointing out that Al Thuwairat has a specialist risk management division which contains a number of people who are highly skilled in risk

management and have a lot of experience identifying and controlling potential risks. Interviewee 3 also pointed out that there were clearly some types of risks which it was not possible to control for, such as human error – "if this is the case, you just have to include a contingency in your planning process to include this possibility and you need to take it as it comes … you can try to control as much as you can but there are some risks which you simply cannot predict."

To what extent, and how effective, are the business continuity management practices which are being applied to mitigate operational risks in the Al--- Thuwairat construction company?



Question 4: How effective do you think Al Thuwairat is at managing its operational risks?

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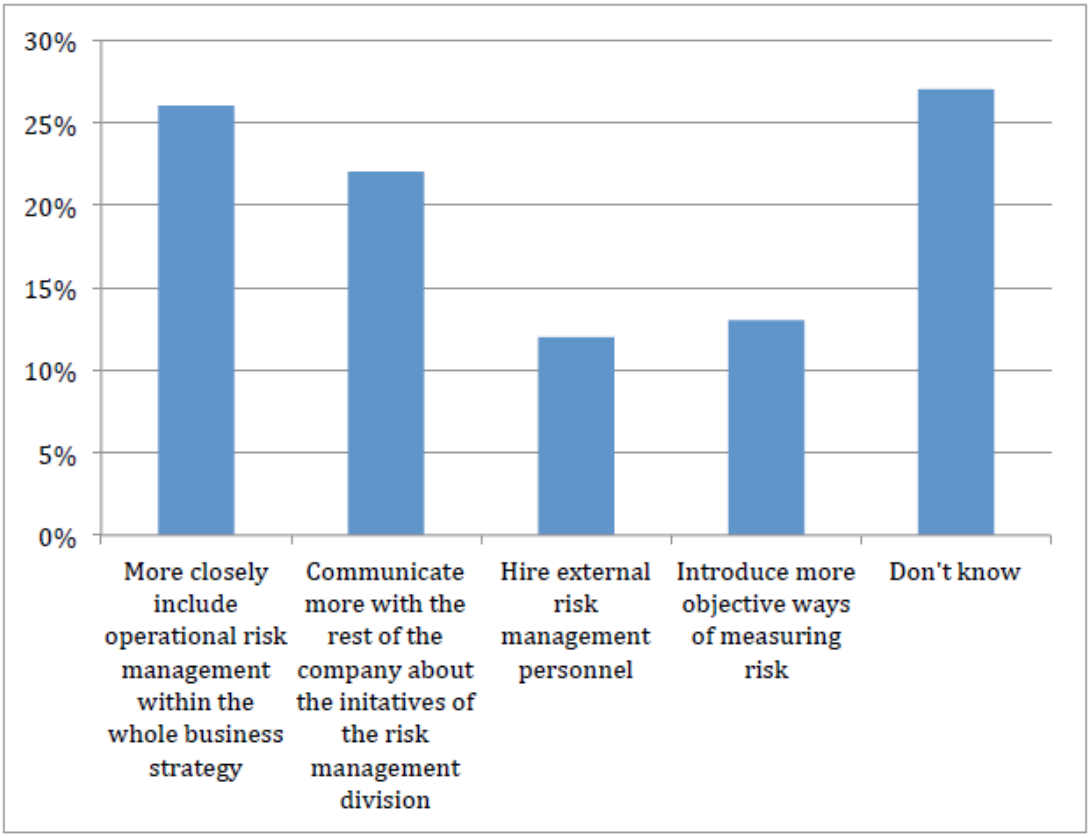
Again, the majority of those who were surveyed did not know about Al Thuwairat's effectiveness level regarding the management of operational risk (43 per cent). This supports the findings of Question 3, which revealed that approximately a third of those who were surveyed were not aware of the methods which were used for the management of risk. The next most common answer, which was provided was by 21 per cent of those surveyed, stated that the company was 'not effective' at managing operational risk. In this case, the researcher thinks that the use of multiple-choice questions was a weakness, since it was not possible to find out the reasons why these answers were provided. In particular, was this a result of the workers' own observations about the way in which operational risk was managed or was it the result of statistics or information which was circulated by the company?



Question 5: What steps do you think could be taken to increase Al Thuwairat's effectiveness at operational risk management?

It could be argued that the usefulness of the answers received for this question was limited by the fact that such a high proportion of the people in the previous question did not know about how effective the existing methods of risk management were. Also, in this case, 27 per cent of those who were surveyed stated that they didn't know what more effective risk management techniques could be implemented since they clearly didn't know what the existing methods of risk management would be. Aside from that, the next most common answers provided stated

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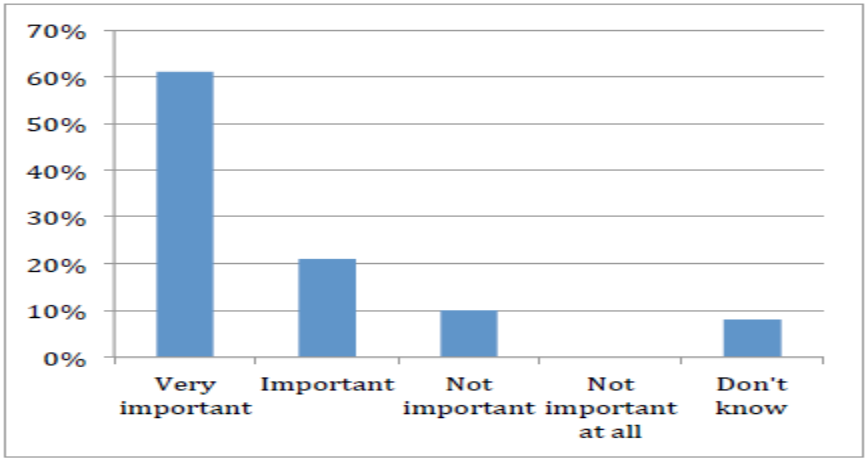
that the operational risk management of the company would be increased if they integrated the management of operational risk more closely with the overall strategy of the business (26 per cent of those who were surveyed), and if they also engaged in more communication with the rest of the company about the measures which were being taken by the risk management division (22 per cent). Given that there appears to be a clear lack of knowledge among most of the employees of the nature of the risk management measures which were being implemented, it does seem that there is a clear need for the company to communicate more clearly about the risk management techniques which are being implemented.



Question 6: How important do you think risk management is?

Interestingly, despite the fact that the types of risk management techniques which are being implemented by Al Thuwairat are not widely understood by the rest of the company, the majority of those who surveyed (61 per cent) still understand that effective operational risk management is very important. None of those who were surveyed thought that risk management was unimportant. The fact that such a high level of importance is associated with operational risk management at Al Thuwairat suggests that there is indeed an appetite among the employees at the company to learn more about the risk management measures which are in place, and this may suggest that a better level of communication regarding risk management techniques may not be that challenging.

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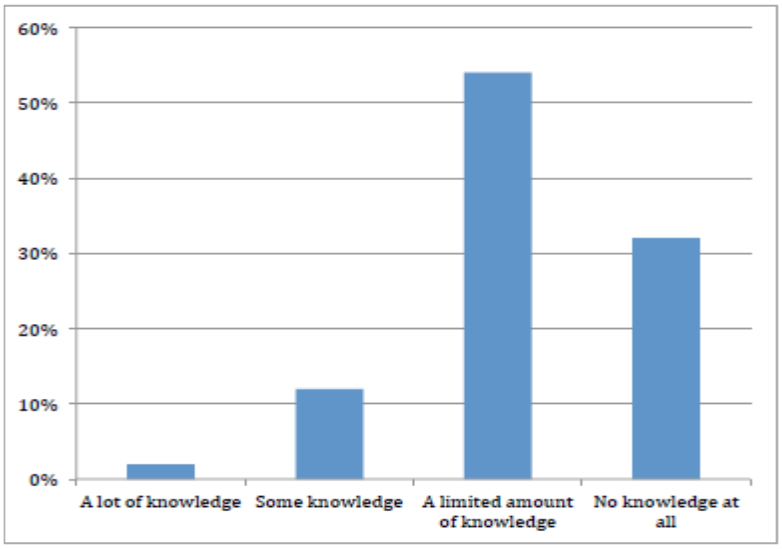
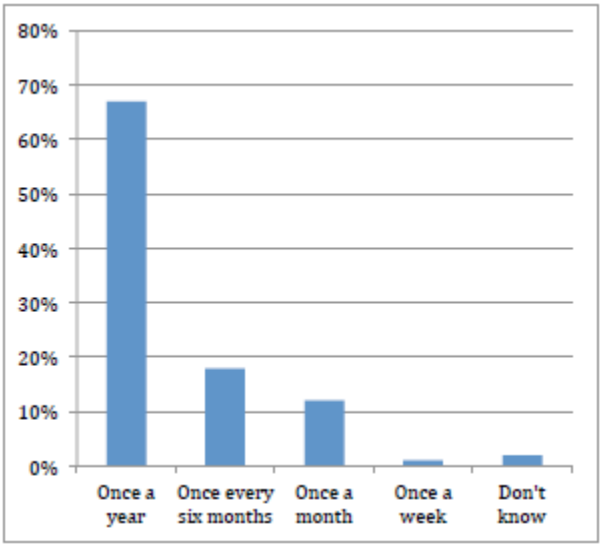


Question 7: How much knowledge do you think you have about the risk management process which Al Thuwairat follows to manage its operational risks?

Again, the answers provided to this question support the results of the previous questions. 53 per cent of those who were surveyed were of the opinion that they only had a 'limited amount of knowledge' about the nature of risk management within the company and almost a third of those surveyed stated that they had no knowledge at all. This strengthens the case for the need for a greater amount of communication between the risk management divisions and the employees about the types of risk management measures which are put in place.



Question 8: How often do you receive communications from the risk management division about the methods they are using to manage operational risks?

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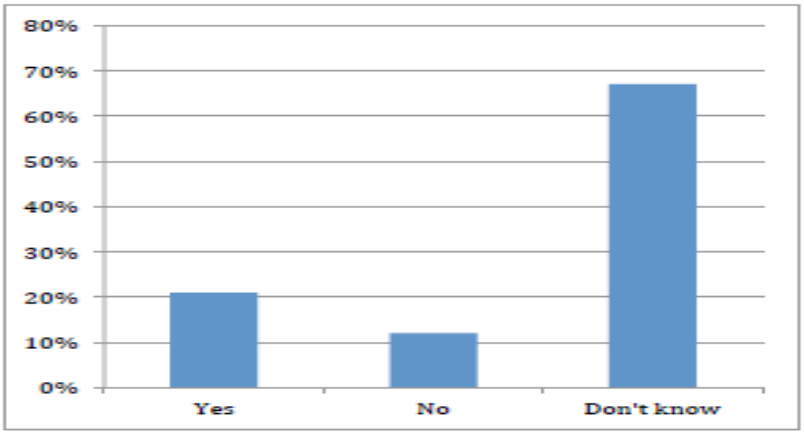
The majority of those were surveyed (almost 70 per cent) stated that they only received communication from the risk management division about the kind of management techniques which were put in place once a year. Only 12 per cent of those who were surveyed received information more regularly than this, at once a month, and 18 per cent of those surveyed received information once every six months. The answers provided to this question reinforces the findings of the previous question and indicates that there is a clear lack of sufficient information between the company's risk management division and the rest of the company.



Question 9: Would you like to be more involved in the risk management process?

Despite the fact that a large proportion of those surveyed were aware of the importance of operational risk management, it is interesting to note that the vast majority of respondents (68 per cent) who replied did not know whether they wanted to receive more information about risk management. Only 21 per cent of respondents stated that they clearly wanted to receive more information about risk management. It might be that, although the majority of employees do understand the importance associated with risk management, they do not feel like they actually need to know about it in more detail. It would be interesting to be able to find out why many of the respondents feel this way and whether they feel that risk management is relevant to the jobs which they perform outside the risk management division. The consensus among the individuals who were interviewed was that the risk management procedures used within Al Thuwairat were highly effective. As Interviewee 2 put it, "if they weren't effective, then we wouldn't be here and we wouldn't be as successful… there are so many risks in the construction business that not controlling for risk means that you are out of business." However, the majority of the responses received were rather vague and pointed to the strength of the company's reputation as evidence of the effectiveness of the risk management framework. However, there was little information provided about the way in which the effectiveness of the risk management was measured. The only mention which was made of a methodology to measure the effectiveness of risk management was made by Interviewee 3, who said that the organization had a biannual review of how effective all of the projects had been, but this did not appear to be focused particularly on the management of risks. Instead, the decisions made about how effective the operational risk management in a project had been did seem to be very subjective, but without the use of a methodology which was rigorous enough to measure it.

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RECOMMENDATIONS

The need for communication with other members of the company

The results of the survey suggest that there is a clear lack of communication between the risk management division within the Al Thuwairat Construction Company and the rest of the organization. This was shown by the fact that a large proportion of the employees who were surveyed did not have much knowledge of the risk management measures used by the company, and they did not know how effective they were. This is supported by the fact that most of the people who were surveyed only received communications from the risk management division once each year. Although the majority of the people who were surveyed did not display a strong desire for more communication from the risk management division, it is suggested by Osborne (2007) that, in order to be effective, it is important for there to be close communication between the risk management division and the rest of the organization. In particular, this is because, in order to be effective, the strategy of the risk management division needs to be linked closely with the overall strategy of the business. It needs to have the support and the understanding of all employees in the organization because their jobs are highly affected by risk management, and the effectiveness of a risk management strategy is closely related to the quality of its implementation (Osborne, 2007).

As a result, it is suggested that all companies should make sure that their risk management strategies are closely linked to the overall strategy of the business, and that details of the risk management strategy are provided to other employees within the organization on at least a quarterly basis. This will help employees to have a greater understanding of how their jobs are affected by risk management, how it helps the overall organization, and the steps they can take to improve the quality of risk management.

Systematic identification of risks

The results of the semi-structured interviews suggest that the way in which risks are identified within construction companies must be highly systematic. In particular, the strength of the process at Al Thuwairat appears to be closely linked to the fact that both qualitative and quantitative methods are used to identify the risks. The qualitative methods consisted of brainstorming, which was conducted with a mixture of both experienced and less experienced members of the company, and the quantitative methods consisted of an algorithm, which was used to categories each risk in terms of the likely impact on the company. It is suggested that a similar method should be used in all construction companies – although, as one interviewee pointed out, it is only once the project has begun that all of the associated risks can be clearly identified, so it is necessary for as much effort as possible to be dedicated to identifying the risks associated with a project in the early stages.

Access to skilled personnel

One finding which emerged from the interviews was that a range of different people who were qualified in the area of risk management were used in the process of defining risks. The most obvious example of this is the fact that, working in the risk management division, were several highly experienced and qualified risk management personnel who had a highly qualified background of identifying and measuring risks in construction projects. This increased the likelihood that all of the relevant risks would be identified effectively. Another example of the way in which the effectiveness of risk management was increased was in the fact that the company had access to a wide range of legal personnel who were able to provide them with

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advice on drawing up contracts for managing risk. Either way, it is clear that one of the strengths of the company in the way that it managed risk was due to the close access that it had to people who were highly skilled in the management and identification of risk. It is suggested that all construction companies should make sure that they have a similar level of access to people who are skilled in risk management, or that they should outsource their work to agencies who are able to provide them with this expertise.

Systematic measurement of the effectiveness of risk management

One of the most surprising findings of the conducted interviews was that there did not appear to be a systematic way of measuring the effectiveness of the operational risk management in the company after the completion of a project. Instead, the way of measuring the effectiveness of risk management was very subjective. This is concerning because, as Elliott, Swartz and Herbane (2010) point out, one of the most important aspects, which is necessary in order to ensure the effectiveness of risk management, is the existence of a systematic way of measuring its effectiveness. In particular, Estall (2012) suggests that there should be a rigorous methodology in place which examines the effectiveness of the way that risks in a project have been measured against a set of clear criteria. These criteria can include financial impact to the company, reputational effect, and internal resources which have been employed in the management of that risk. This is highly important because, if it is identified that there are weaknesses in the way that risks are being measured within construction projects, it is necessary for a new methodology for risk management to be introduced as soon as possible. It is therefore suggested that a construction company should arrive at a set of metrics which can be used to measure the effectiveness of their risk management – these metrics should be agreed upon as the result of discussion with the relevant risk management personnel. It is also suggested that a review of the effectiveness of the company's risk management should be carried out on a regular, quarterly basis. This will increase the likelihood that any issues will be quickly identified and that the necessary improvements to the company's risk management methodology can be made efficiently.

Analysis of findings

The results of the research show that there are many strengths that result from the use of business continuity management in the company. Firstly, the use of this method has resulted in the effective identification of the risks which are associated with each project. This is related to the fact that both quantitative and qualitative methods are used to identify the risks at the beginning of each project. Risks are measured and quantified based on the likelihood that they will happen and the impact that they will have on the company if they took place. Secondly, the company has made sure that it has access to a range of differently qualified individuals who are able to provide them with advice about how to identify and manage risks. This increases the likelihood that risks will be accurately identified and managed effectively. These skilled personnel include not only people who have skills in risk management but also lawyers who have experience of drawing up contracts to manage the risks of companies.

However, there are also several weaknesses which are associated with this risk management method. Firstly, the results of the interviews suggest that the risk management techniques which are used are not clearly communicated with the rest of the organization; this raises doubts about the extent to which the company's risk management strategy is tied in with the organization as a whole, which is a key requirement for success in risk management. Also, the way that the effectiveness of risk management in different projects is measured is not very

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objective. Rather, it seems to be very subjective and there do not seem to be any criteria about how to measure the effectiveness of risk management. This is a problem because it means that there is no systematic way of evaluating any weaknesses in the risk management methodology being used, which makes it less likely that improvements will be made. However, the fact that there was a consensus that most of the operational risks associated with construction companies were external to the company suggests that overall the company is effective at managing its operational risk.

In order to address these issues, the researcher made some recommendations, which can be carried out not only by the Al Thuwairat Construction Company but also by any company in the construction industry. These recommendations included having closer communications between the risk management division and the rest of the organization; having access to skilled personnel in the fields of risk identification and management; agreeing upon criteria which can be used to measure the effectiveness of risk management in different projects; and holding regular sessions to review the effectiveness of risk management.

Limitations of the research

Although it is believed that all of the chosen research methodology is well suited to the research topic, there are, as always, restrictions on how useful and how effective this research methodology is likely to be. One of the biggest restrictions is the small sample size of the primary research – the limitations of the paper in terms of time and resources meant that it was not possible to interview more than ten people or to send the survey to more than a hundred people. As a result, it is difficult to say how easy it is to expand the results of the research to apply to all construction companies or to Al Thuwairat as an entire company. Another issue with the research is that, based on the research conducted in this paper, it is difficult to say whether the experiences of Al Thuwairat are unique or whether they are very general to the construction industry in Saudi Arabia. In other words, it would have been very helpful to compare the experiences of Al Thuwairat with the experiences of other construction companies in Saudi Arabia. This would have helped to give a bigger insight into how common the problems faced by the Al Thuwairat construction company are, and if they are not very common, what the possible reasons for these problems were. Again, the reason why this comparison was not conducted was because there was little time available to complete the research, but in future, with more resources, this research should be carried out.

CONCLUSION

The results of this study suggest that there are a number of recommendations which should be made by construction companies in order to increase the effectiveness of their operational risk management. Firstly, it is suggested that they should ensure that they have access to people with the necessary skill in risk identification and management. This can be done either by hiring the relevant people or by outsourcing. Secondly, it is suggested that the risk management division needs to communicate more closely with the rest of the organization. Thirdly, it is suggested that, at the beginning of any project, there should be a systematic process of identifying the associated risks using a variety of both qualitative and quantitative methods. Finally, it is suggested that there should be a regular series of meetings to measure how effective the company has been at managing operational risk in past projects, and that this should be conducted by comparing the effectiveness of the risk management to various metrics.

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