



Economic benefits of standards

Teckwah Industrial Corporation Ltd, Singapore

Country: Singapore

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Implementation of

SS 540:2008

**Singapore Standard on
Business Continuity
Management**

**by Teckwah Industrial
Corporation Ltd.,
Singapore**

1 Objective and organization of the ISO case project

1.1 Objective

The main objective of the ISO case study was to determine and quantify the economic benefits that can be gained by a company implementing external standards in its business. This enables stakeholders in both private and public sectors to better appreciate the economic and social impact of voluntary consensus standards and to raise the awareness of policy makers and business leaders of the importance of standardization. While many companies realise the importance of the use of standards, few have analysed their impact on the company's bottom line and their key role in a company's strategy.

1.2 ISO case study project timeline

This ISO case study in Singapore was initiated in May 2012 and the report finalised in February 2013. The project was conducted by SPRING¹⁾ Singapore with guidance from the ISO Central Secretariat Advisor and the support of an intern from the National University of Singapore. Teckwah Industrial Corporation Ltd (Teckwah), the first company in the printing and packaging industries to have achieved 3rd party certification to SS 540:2008 (SS 540) the Singapore Standard for Business Continuity Management, participated in the project.

1) SPRING Singapore is the enterprise development agency responsible for helping Singapore enterprises grow. We collaborate with partners to help enterprises in financing, capability and management development, technology and innovation, and new market access. As the national standards and accreditation body, SPRING develops and promotes an internationally-recognised standards and quality assurance infrastructure that builds trust in Singapore enterprises, products and services, thereby enabling their global competitiveness and facilitating global trade.

1.3 Methodology

The ISO methodology aims at assessing and quantifying the impacts of standards from the perspective of the selected company. The methodology is organised around the following four key steps :

Step 1 : Understand the value chain²⁾

Desk research was undertaken on the print and packaging industry with a view to determining the value chain for the industry and subsequently for the selected company.

Step 2 : Identify impacts of standards

The relevant standards are described and their impact on all activities of the business functions is identified and mapped to the company value chain following a series of interviews with the organisation's senior management.

Step 3 : Analyse value drivers and define operational indicators

Value drivers are organizational capabilities crucial for the success of each business function forming the value chain. This assessment identifies the value drivers specific to the value chain of Teckwah, the company selected for this case study. The impacts of the standards on the value chain are measured and quantified using operational indicators which are then translated into financial impacts.

The impacts of standards are quantified on an annual basis ; however, the projected impact spans over a 5-year period from the introduction of a standard after which the improved operations become an integral part of the company's normal operating procedures.

2) A value chain is a chain of activities. Products (or services) move through all the activities in a prescribed order, gaining value in some way at each stage of the chain. It was first described and popularised by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*.

Step 4: Assess and consolidate results

After quantifying the impact of different standards, the value creation of standards in each business function is aggregated and calculated against the profit of the selected company. Important qualitative impacts of the standards are also included.

2 Introduction to the selected standard

The SS 540:2008 is the Singapore Standard for “Business Continuity Management” that is embraced by both the international and local businesses operating within Singapore. The project to develop such a standard was initiated in 2004 by the Economic Development Board (EDB) in collaboration with the Singapore Business Federation (SBF) and SPRING. The Business Continuity Management (BCM) Council led the project with the support of the BCM Technical Committee which developed the Technical Reference. Launched in September 2005, during an international ISO meeting, the Technical Reference (TR19:2005) was subsequently reviewed and published as the Singapore Standard for BCM and officially launched on 31 October 2008³⁾. BCM aims to safeguard the interests of a company and its key stakeholders by protecting its critical business functions against predetermined disruptions.

The standard defines a holistic management process, identifying potential threats to an organisation and providing a framework for building resilience. It also provides the capability for an effective response to safeguard the interests of its key stakeholders, reputation, brand and value creating activities⁴⁾. Potential disruptions to

3) www.itsc.org.sg/pdf/synthesis09/Four_SS540_2008.pdf

4) SPRING Singapore (2008): Singapore Standard for Business Continuity Management (SS 540:2008).

stakeholder interests have to be identified, pre-empted or kept to the minimum. Business functions supporting value creating activities have to be identified and processes and resources put in place to ensure continued operation of these functions in spite of disruptions. The BCM standard was chosen for this case study as Singapore has been encouraging organisations to enhance their competence, capacity, resilience and readiness to respond and recover from events which threaten to disrupt normal business operations and activities. The primary objective is to minimise service disruption to customers and the public in general.

3 Introduction to the selected company

Teckwah was established in 1968 in Singapore as the Teck Wah Seng Kee Company to produce packaging boxes. Over the years, it evolved and diversified into a group of companies providing a wide range of turnkey manufacturing services and products to the industry. The company has withstood many business and environmental changes evolving from : a family-owned to a public listed company ; a home-grown company to a multinational corporation ; and from a packaging box manufacturer to a solution service provider. Teckwah manages its global operations from its headquarters in Singapore.

Public listed on SESDAQ in 1994 and upgraded to the mainboard of Singapore Exchange in May 2003, the company aims to be the preferred business partner of global companies, creating and delivering the Best-in-Class Value Chain Solutions worldwide. Today it employs more than 1,300 staff worldwide and has manufacturing plants in Singapore, Malaysia, Indonesia, China, Taiwan, Thailand, Japan and Australia.

Teckwah has firmly established itself as a company providing cost-effective customised solutions for its clients. Its suite of services includes:

- printing and packaging solutions,
- turnkey software manufacturing,
- value chain management,
- service parts logistics, and
- reverse logistics.

4 Attitude of the company towards standardization

Teckwah's belief in adopting standards relevant to its industry has shown results in its business growth, hence making it an ideal company for this case study. One of the key players in the printing and packaging industry, Teckwah not only uses standards to enhance efficiency in cost and operations, it also helps to raise the standards of the industry by encouraging local companies, namely its suppliers, to also use standards. The company is not simply an operational user of standards, it also derives strategic advantage from them, seeing standards as fundamental commercial tools to help gain access to markets. Standards are part of the company's daily activities, on which processes and personnel rely.

Currently, Teckwah has implemented the standards and achieved the awards as listed below:

- ISO 9001:2008, *Quality management systems – Requirements*
- Singapore Quality Class – bestowed on organisations having attained business excellence, based on the high standards required under the Singapore Quality Award framework (SQA).
- ISO 14001:2004, *Environmental management systems – Requirements*

- OHSAS 18001:2007, *Occupational health and safety management systems – Requirements*
- ISO 28000:2007, *Specification for security management systems for the supply chain*
- Singapore Quality Award – the most prestigious award conferred on organisations in recognition of their attainment of world-class standards of performance excellence.
- Secure Trade Partnership (STP) Certification – a programme administered by Singapore Customs to encourage companies to adopt robust security measures in their trading operations for improvement in the security of the global supply chain.
- Singapore Standard SS 540:2008, *Business Continuity Management (BCM)*
- Forest Stewardship Council – Chain-of-custody (FSC-CoC) Certification – tracing the path of products from forests through the supply chain, and verifying that FSC-certified material is identified or kept separate from non-certified material throughout the chain.
- ISO 12647-2:2004, *Process control for the production of half-tone colour separations, proof and production prints – Part 2: Offset lithographic processes*

Year of certification/ award	Latest standards certified/ awards achieved	Achievements/remarks
1990	ISO 9001:2008	<ul style="list-style-type: none"> • 1988 – implemented QMS, (then called GMP) • 1989 – certified to ISO 9002 • Since 1990 – converted to ISO 9001
1997	Singapore Quality Class	First printing company to achieve Singapore Quality Class
2000	ISO 14001:2004	<ul style="list-style-type: none"> • 1999 – implemented EMS • 2000 – certified to ISO 14001
2002	OHSAS 18001:2007	<ul style="list-style-type: none"> • 2001 – implemented OHSMS • Since 2002 – certified to OHSAS 18001

Year of certification/ award	Latest standards certified/ awards achieved	Achievements/remarks
2003	People Developer	Awarded by SPRING Singapore
2006	Singapore Quality Award	Awarded by SPRING Singapore
2009	Secure Trade Partnership	Awarded by Singapore Customs
2009	SS 540:2008	<ul style="list-style-type: none"> • First company in the private sector certified to SS 540:2008 • 2003 – aligned to SPRING’s Standard on Guidelines for BCM • 2006 – converted to TR19:2005 • Since 2009 – converted to SS 540:2008
2010	FSC–CoC	Certified by Det Norske Veritas
2010	ISO 12647-2:2004 Process Standard Offset	Certified by Fogra
2011	Singapore Quality Award	Awarded 2 nd time
2012	ISO 28000:2007	Certified by TÜV SÜD PSB Pte Ltd

Table 1 : Milestones achieved by Teckwah

Teckwah has documented its practices according to the above standards in a quality manual known internally as Quality, Environmental, Safety & Health Management System (QuESHMS).

The company emphasizes the application of management system standards such as ISO 9001, ISO 14001 and OSHAS 18001 rigorously in order to institute a systematic management approach, as well as reduce occupational health, safety and environmental hazards. This policy allows for a leaner organisation of processes and meets customer requests for conformity with standards. In addition, the company uses these standards along with others such as SS 540 for strategic marketing purposes, to create and maintain customer confidence and overall reputation and to expand its market reach.

5 Analysis of the value chain

The SS 540 is the only standard assessed for its impacts in this case study. It is unique in that it is not a process, product or regulatory standard the impact of which is felt at various stages of the industry value chain. Rather, it is a standard that allows a given company to identify critical business functions and events that can cripple those functions. It also devises means to lower the chance of that happening or at least draws up a concrete plan on what to do when such an event occurs so as to minimise business costs. Therefore, this case study focuses more on the value chain of Teckwah rather than the industry that Teckwah is part of.

5.1 Company value chain

The general value chain model for manufacturing companies, developed by Michael Porter was modified to suit Teckwah's system of basing production on orders and conducting engineering processes after the conclusion of sales contracts.

The company's key value chain components as shown in figure 2, is described as follows:

1. Management & Administration

Management provides resources to Business Development. The corporate services include finance, human resources, information & communication technology as well as quality system & facility activities.

2. Information and Communications Technology (ICT)

With the evolution of technology and the networked global market, ICT has become instrumental in services and is tightly coupled with the production of goods and functionality of most major businesses.

In Teckwah, the ICT department plays an integral role in providing ICT solutions, infrastructure and support to promote automation and services to its core business. The role of the ICT department is to explore ways of harnessing the potential of ICT to improve Teckwah services and operations to customers in both the print and non-print logistics business, as well as new business ventures that Teckwah will undertake in the future. Specifically, the ICT department is guided by the following objectives :

- I. Development and use of reliable ICT solutions and information infrastructure to support effective operations and services to Teckwah customers, as well as to support internal administrative functions of Teckwah.
- II. Maintain the IT systems and infrastructure in Teckwah to support continual operations, locally and in the regional offices.
- III. Development and implementation of ICT policies & strategies.

3. Business Development

The Business Development Teams work closely with the Solution Center to develop new products and solutions in line with Teckwah's business strategy, to meet both customers' current and latent requirements.

It also supports the regional Business Development Teams in attracting new customers as well as increasing business with existing customers through engagement and excellent sales service support.

4. Procurement (In-bound Logistics)

The Procurement Department selects the pool of reliable, qualified and key suppliers for the procurement of equipment,

parts, materials and services to fulfil on-time delivery and ensure Teckwah's efficient operations.

Procurement, together with the Quality Assurance Department, also conducts regular assessments of key suppliers, at least once every two years.

5. Engineering

The Engineering Department comprises the following sections:

- I. The Maintenance Section coordinates plans and schedules appropriate maintenance (preventive and corrective) for equipment used in production and warehousing. The section also works with the ICT department to resolve all software related issues occurring during production.
- II. The Administration Section maintains the records, manages availability of essential parts and monitors the performance of all equipment on a regular basis. It also initiates the purchase of equipment and services and monitors the work of suppliers.

The Engineering Department also works with other departments to:

- review the current factory layout
- recommend improvement to the material flow for better efficiency
- recommend and implement new cost saving initiatives to operations
- set-up a production line according to new project requirements
- coordinate with contractors on all new facility set-ups

6. Production

The Production Department comprises the following sections:

- I. Pre-press section consisting of two teams :
 - The Structure Design Team – works closely with customers from the early stages of product development and provides professional input to address packaging needs. Using cutting-edge computer-aided-design (CAD) software, the team turns a conceptualisation idea into an unprinted mock-up sample.
 - The Database Management Team – manages customers’ source files for colour separation and desired print layout.
- II. Press Section :

Responsible for performing print operations that meet various colours and finishing requirements for printing and packaging needs.
- III. Print-on-Demand Section :

Equipped with digital on-demand printing capability and catering for both immediate and short-run personalised needs.
- IV. Pressure Sensitive Adhesive Label Printing Section :

Manages the label printing requirements of mainly key pharmaceutical customers. Uses flexographic technology to produce pressure sensitive adhesive labels.
- V. Turnkey Software Manufacturing Section :

Converts and/or assembles various types of consigned items or printed materials into finished goods based on customers’ assembly requirements.
- VI. Media Control Section :

Manages the incoming secured Intellectual Properties (IP) information or data, directly or indirectly from customer source to output components such as CDs or DVDs.

7. Warehousing & Delivery (Out-bound Logistics)

The key functions of the department are :

 - I. Receipt of raw materials from suppliers
 - II. Issuance of raw materials and goods to Production
 - III. Receipt and storage of finished goods from Production
 - IV. Shipment and delivery to local and overseas customers

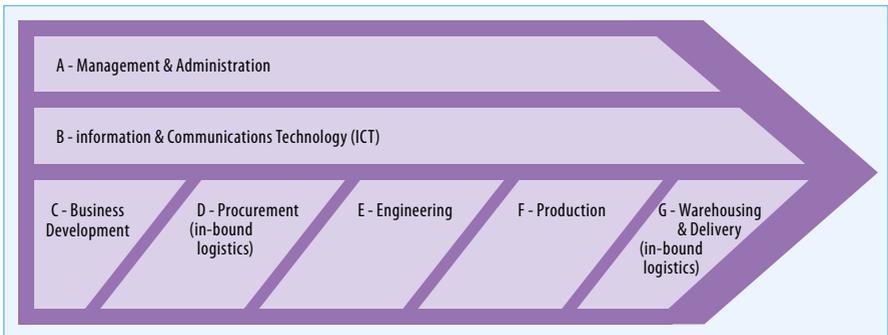


Figure 1 : Key value chain components of Teckwah Industrial Corporation Ltd

5.2 Key value drivers

During interviews, Teckwah identified several value drivers that were key to the success of the company's core business processes thereby carving a niche for the company in the Singapore printing and packaging industry.

They include :

- Quality of products and processes
- Continuous improvement
- Extensive use of Information and Communication Technologies (ICT) to boost productivity
- In-depth knowledge of the market and always being ahead of competitors

- A full spectrum of printing and packaging capabilities
- Extensive partnership with suppliers
- Efficient production
- Extensive distribution channels

6 Scope of the ISO case study

Only the Singapore Standard SS 540:2008 dealing with the implementation of BCM is considered for the purposes of this study. It focuses on the key critical functions of Teckwah such that its business can still be conducted in the event of a disruption. The study also looks at the business functions associated with the value drivers of Teckwah and covers the following key business functions:

1. Information and Communication Technology (ICT)

ICT is critical as most of the company's processes are on Enterprise Resource Management systems which, if not functioning, can delay or shutdown commercial activity.

2. Business development

With many multinational corporations (MNCs) in its client portfolio, Teckwah is aware of its responsibility in meeting high standards of corporate governance and conduct. Furthermore, many of its global clients are dependent on Teckwah for certain customised services.

Therefore a stable functionality of the company's operations is vital for Teckwah to assure uninterrupted and high-quality services.

Since its BCM inception, customers have reflected an increase in confidence in the company's competency. They often use Teckwah as a benchmark when sourcing for alternative suppliers. In order to strengthen their business supply chains, some

customers have even stepped forward to align their own business continuity plans with those of Teckwah.

3. Procurement

Teckwah periodically tests its supplier's service support system and also assesses its supplier's efficiencies. This yearly practice fosters and renews strong relationships within the supply chain, enabling value creation and sustainable win-win consequences.

Procurement is an essential service to Teckwah as it ensures that equipment, parts, materials and services are always available to support the continuity of its production activities.

4. Production

Teckwah relies on a smooth and continual production to meet customers' requirements and its business objectives.

Teckwah creates synergies by leveraging on its subsidiary plants facility as alternate production sites. Should production at the current premises be shut down owing to a crisis, the company would be able to continue its operations at an alternate site. Moreover, Teckwah trains its employees to enable efficient deployment at an alternate site.

These functions were chosen as part of the scope of this case study as it is possible to quantify the benefits related to SS 540.

7 Identifying impacts of standards

The following table indicates the impacts of SS 540 on Teckwah's operations.

Selected business function	Impact of standard	Description of impact
ICT	Better continuity of transfer of internal and external operational information	Restore and return to business activities within the shortest possible time after a disruption has occurred.
Business development	Enhanced branding and reputation	Customers are more receptive to doing business with companies with sound business continuity measures.
Procurement	Availability of raw materials	Less likelihood of production delay resulting in less cost incurred.
Production	Production staff are BCM ready	Production staff are familiar with their roles and responsibilities and are competent in executing the business continuity (BC) plans.
Production	Availability of production facilities at alternate sites	Resumption of production operations within the acceptable downtime.

Table 2 : Description of Impacts

8 Selection of operational indicators to measure the impacts of standards

The table maps the selected business functions and describes associated activities and their value drivers. It also defines the operational indicators used to measure the impact of SS 540 on Teckwah.

Selected business functions	Impact of standards	Value drivers	Operational indicators	Definition of indicators
ICT	Better continuity of transfer of internal and external operational information	Extensive use of Information and Communication Technologies to boost productivity	IT infrastructure readiness	Loss of profit due to downtime of IT infrastructure
			Availability of records	Cost savings in recovery of lost data
Business Development	Enhanced branding and reputation	<ul style="list-style-type: none"> • Offers a full spectrum of print and packaging capabilities • In-depth knowledge of the market and always ahead of competitors 	Value of contracts	Profit increase in contractual values.
Procurement	Availability of raw materials	<ul style="list-style-type: none"> • Quality of product and processes • Extensive partnership with suppliers • Extensive distribution channels 	Materials Availability	Availability of raw materials to support production operations at alternate sites to minimise loss of profit due to disruption
Production	Production staff are BCM ready	<ul style="list-style-type: none"> • Quality of product and processes • Efficient production 	Manpower readiness	Adequate manpower for resumption of acceptable production level
Production	Availability of production facilities at alternate sites	<ul style="list-style-type: none"> • Quality of product and processes • Efficient production 	Production facilities availability	Cost savings in recovery of production operations at alternate sites Loss of profit due to downtime

Table 3 : Operational indicators

9 Calculation of the economic benefits of standards

The following table indicates the financial impacts of the various operational indicators as defined in the earlier section. In addition, the impact is reflected in the form of cost savings or increase in revenue, and calculation of the value of the impact is based on either known data or an estimation by Teckwah.

Business functions	Operational indicators	Financial impacts of S\$ 540 (SGD)	Percentage of total
Financial impact on profits			
ICT	IT infrastructure readiness	\$24,000	1.65 %
Business development	Value of contracts	\$1,384,000	95.50 %
Production	Production facilities availability	\$24,000	1.65 %
	Sub Total	1,432,000	
Financial impact on cost savings			
ICT	Availability of records	\$6,800	0.47 %
Procurement	Materials availability	\$1,600	0.11 %
Production	Manpower readiness	\$9,000	0.62 %
	Sub-total	17,400	
	TOTAL	\$1,449,400	100.00 %

EBIT, 2011	SGD 13,500,000
Financial impact on profits of S\$ 540	10.6 %

Note: EBIT – Earning Before Interest & Tax

Table 4 : Economic benefits of implementing S\$ 540:2008

9.1 Methodology for calculating operational indicators

The values in **Table 4** above were determined from the following input provided by Teckwah. It was assumed in the study that disruptions would occur only once per year. The disruptions were limited to denied access to its own facilities due to threats such as fire, flooding and power outage. It was also assumed that all manpower were readily available to execute the Business Continuity Plan (BCP). The calculation is based on available knowledge and experience to date. Due to the unpredictability of the future, this valuation could change dramatically in light of future events both in positive terms (e.g. higher valuation due to proof of effective mitigation of a second severe disruption) as well as in negative terms due to a failure of the system to mitigate against drastic and unforeseen events.

- IT Infrastructure readiness

In 2007, an IT connectivity breakdown occurred due to hardware failure that resulted in a 4-day downtime needed for troubleshooting and replacement of parts.

After BCM implementation, Teckwah estimated that the loss of IT infrastructure could result in disruption of business transactions at a profit loss of \$24,000 based on 8% sales revenue of \$150,000 per day, over a period of 2 days which is a reduction of 2 days.

The BCM implementation has helped Teckwah to improve its IT infrastructure and meet the Recovery Time Objectives (RTO).

The creative solution introduced was to relocate its live servers offsite thus enabling Teckwah to concentrate its IT resources on recovery operations and meet the RTO.

- Availability of Records

Before implementation of BCM, the data backup was carried out on a weekly basis. During the actual disruption, 2-days' worth of data was lost and Teckwah had to mobilise 34 staff

members for 3 days (outside office hours) to perform re-entry of the lost data.

Since implementation of BCM, data backup takes place on a daily basis thereby enabling Teckwah to reduce the recovery period from 3 days to 1 day. Consequently, the value of this impact was determined by multiplying the number of staff members by the estimated daily manpower cost of \$100 and the number of days for re-entry of the data (34 staff members x \$100 per day x 2 days), resulting in cost savings of \$6,800.

- Value of contracts

As a BCM certified company, Teckwah meets key customers' contractual requirements. Existing contracts are renewed annually and new ones secured. The profit from these contracts, estimated at \$1,384,000, is based on 8% of the annual sales revenue from key customers.

It is assumed therefore that customers understand the business risks and the value of the BCM system as a means for identifying and pre-empting future risks and disruptions or, if they occur, reducing their impact.

- Materials availability

Without BCM, a minimum of 3 days would be required to secure material supplies from the open market.

With BCM, Teckwah's suppliers are able to deliver one day's supply of materials at short notice to support production upon operation recovery. This saves the company from having to source for supplies during a disruption on the open market and pay a premium price. Avoiding a premium price estimated at 8% of the original price of \$20,000 results in a cost saving of $(0.08 \times \$20k)$ \$1,600.

- **Manpower readiness**
Before implementation of BCM, a disruption of denied access to the building, required 4 days to deploy staff to resume production at an alternate site.
After implementation of BCM, staff are operational ready and the alternate sites are better equipped thereby reducing the time needed to recover production operations by 2 days. The resumption of production would require 45 staff members costing the company an estimated S\$100 per employee per day. The value of this impact was determined by multiplying the 2-day reduction of downtime by the cost for the 45 employees, ($\$100 \times 45 \times 2\text{days}$) resulting in cost savings of \$9,000.
- **Production facilities availability**
Before BCM, the alternate site was not adequately set-up to support the production during a disruption and would require 4 days of preparation.
With BCM, Teckwah is able to resume production at the alternate site within 2 days. The value of the impact was determined by multiplying the number of days of downtime by the loss of sales per day in terms of profit at 8% ($8\% \times \$150,000 \times 2\text{ days}$) resulting in cost savings of \$24,000.

9.2 Impacts on specific business functions

Table 5 below illustrates the impact of SS 540 on individual business functions.

Selected Business Functions	Total financial impact
ICT	\$30,800
Business Development	\$1,384,000
Procurement	\$1,600
Production	\$33,000
Total Impact of Standard	\$1,449,400

Table 5: Summary of impact of standards across different business functions at Teckwah

Table 5, shows that the impact of SS 540 is most felt in Business Development. Teckwah's key customers are multinational companies which expect their suppliers to have sound BC plans to ensure that critical operations are not drastically affected by disruptions occurring along the supply chain. As such, companies like Teckwah which have SS 540 in place are better able to secure and renew higher value contracts.

From **Table 4,** considering that Teckwah's profit before tax in 2011 was \$13,500,000, the impact on gain in profits of \$1,432,000 from the implementation of SS 540 constitutes 10.6% of its profit.

10 Qualitative and semi-quantitative considerations

Other intangible benefits arising from the implementation of the SS 540 which were difficult to quantify in terms of financial gains includes:

- Ability to manage its risks efficiently and effectively through better understanding of their business and improved 'risk-intelligent' decision strategies.

- Enhanced morale and confidence among employees following communication of the BCM measures throughout the company. Owing to staff readiness for BC during disruptions, adverse impacts on the company are minimized.
- Improved branding and reputation of the company enhances its competitive edge over other players who are still deliberating the value of BCM certification.

11 Evaluation of the results

The estimated impact of 10.6 % or \$1,432,000 over a year against Teckwah’s profit on the use of SS 540 shows that the standard is an important element of Teckwah’s business strategy. SS 540 has helped Teckwah to increase revenue as well as to be prepared in advance for any disruptions that might cripple its operations.

Indicators	Financial impacts occur in case of
IT infrastructure readiness	Disruption
Availability of records	Disruption
Value of contracts	Regular operations
Materials availability	Regular operations
Manpower readiness	Disruption
Production facilities availability	Disruption

Table 6 : Relationship between operational indicators & financial impacts

Table 6 shows that financial impacts do not occur only in the case of disruptions. On the contrary, the key impact of SS 540, the “value of contracts”, which makes up nearly 96 % of the total impact, occurs during regular operations. Therefore, the implementation of a system assures customers of the company’s readiness to handle any unexpected disruption or disaster.

Teckwah is a major player in the printing and packaging industry and an emerging player in the logistics industry. In this respect, Teckwah is well placed in encouraging the adoption of standards amongst its peers to improve productivity and efficiency in the running of the business.

Certain benefits in the case study are non-quantifiable, owing to lack of available data. From past BCM case studies, it has been noted that companies with BCM capabilities in place tend to enjoy lower insurance premiums over the years. As such, it is possible that Teckwah could similarly derive additional cost savings. Therefore, the total figure does not reflect the full benefits to the company.

Return on investment

The basic assumption applied in this assessment was that one incident occurs per year disrupting the business functions of ICT & production. The scale of the impact is based on an actual disruption of the operations of Teckwah that occurred in 2007. Evidently, the financial impacts depend on the size of the disruption used as a baseline, however, this selection appears justifiable as it represents the most likely and frequent type of disruption in Teckwah's industry.

1. Financial impact on Profits gained from BCM implementation is \$1,432,000
2. Total investment cost for the 1st year = (i)\$101,950 + (ii)\$59,520 + (iii)\$71,400 = \$232,870
 - I. 1st year BCM implementation cost (manpower, consultancy, training & certification costs) = \$101,950
 - II. Annual cost for maintaining the Emergency Operations Centre is \$4,960 x 12 Months = \$59,520
 - III. Annual rental cost for hosting Teckwah's servers at a data centre is \$5,950 x 12 Months = \$71,400

The return on investment on the implementation of BCM for the 1st year = $A/B = \$1,432,000 / \$232,870 = 614.94\%$

12 Conclusion

The ISO case study has shown that, together with the other standards, Teckwah benefited from the implementation of BCM as a strategic management programme ensuring competitiveness and continuity of its business functions should disruptions occur.

Teckwah understands that the study is reflective of current experience and knowledge, but its results are also open to being put into doubt by whatever the future may have in store. Therefore, common sense would require that the security of business operations be reviewed taking into account possible unlikely events with a view to continuously improving business resilience.

Teckwah has achieved a broad overview of the quantitative and qualitative benefits of implementing SS 540, with a derived estimate of 10.6% increase in its annual profit before tax.

As this case study demonstrates, the dedicated effort by Teckwah in actively adopting the relevant standards is justified through the benefits of standards in enhancing its value drivers and achieving numerous corporate milestones.

This study also shows that Teckwah's partnerships with its suppliers and customers have benefited from improved operational efficiencies, enhanced corporate reputation and a more resilient supply chain from the implementation of SS 540.

With the publication of ISO 22301 in May 2012, Teckwah's management has initiated alignment of its BCM framework to the International Standard on BCM, ISO 22301, so as to exceed its customer's expectations, enhance its global recognition and increase its market access.

