Assessing the quality gap of intellectual capital in banks

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The financial service industry is considered to have the contents of high tech and high knowledge. In addition to being adherent to the conventional wisdom of a conservative management approach, financial service providers should also stay proactive and innovative in developing new services. Therefore, modern banks have to focus on the construction of a comparative and measurement model, develop and manage the internal intellectual capital and be dedicated to the continuous improvement in management. This paper applies the methodology and structure of importance performance analysis and balanced scorecard to analyse the quality gap of all types of intellectual capital of banks so as to come up with tangible suggestions to shorten the quality gap under an integrated BSC structure. It is hoped that the research finding can serve as a reference to bank managers in the constant pursuit of business excellence with the concept of TQM.

Keywords: financial institution management; financial service; quality gap; intellectual capital; IPA

Introduction

The financial service industry is considered to boast high-tech and high-knowledge contents. Shih (2008) suggested that the contributions of the management of financial institutions is to utilise the collective knowledge and experience of all individuals through enhancement and integration of such knowledge and experience on the platforms constructed by financial institutions. This would improve the quality of services and operations on an overall level and satisfy the financial needs of customers. The continuous development of knowledge forms an important resource in the financial industry. Ju, Lin, Lin and Kuo (2006) suggest that both TQM and KM have great influence on a firm’s strategic competence. By continuing to improve products and services and to develop networks, financial institutions are able to create greater business opportunities. This is because they are allowed to reach more consumers and provide personalised services. Intangible intellectual capital, such as the development of talents and innovative products, has become a key focus for the financial industry of modern times. Therefore, it is critical how to measure and assess intellectual capital. For these organisations, intellectual capital is an important concept and knowledge is a precious resource. The creation of knowledge comes from a group of employees who have the capability and enthusiasm. They are able to convert the knowledge owned by organisations into intellectual capital with appropriate methods and effectively accumulate such intellectual capital within organisations. For managers, the

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utilisation of intellectual capital is prerequisite to the creation of competitive advantages. Therefore, Stewart (1997) pointed out that intellectual capital should be a value driver for an organisation. It is an important economic resource for many organisations, as well as a factor that boasts direct impacts on market competitiveness. With the potential developed in the knowledge economy, the competitiveness of companies improves along with the enhancement of intellectual capital. Therefore, many tools in knowledge management and innovation carry increasingly strategic implications for companies and play significant roles in target achievements (Chen, Liang, & Lin, 2010).

Corporate managers realise that accounting information cannot fully disclose non-financial information so they have been gradually placing an emphasis on the measurement of non-financial performances. Some companies attempt to use certain strategic methods to manage intellectual capital. For example, Edvinsson and Malone (1997b) established an intellectual capital system for Skandia, a financial company, in order to effectively manage the company’s intellectual capital. Over the course of 6 years, 75% of the expenses were saved and the productivity increased 400%. According to Fruin (1997), Toshiba boosted its productivity by 20% with effective management of intellectual capital. Lynn (1998) also indicated that Dow Chemical saved US$40 million in patent expenses with the measurement and management of intellectual capital. The innovative approaches in industries sparked a wave of discussions in academics. Many studies confirm that intellectual capital is a value driver of companies. Intellectual capital is considered the most powerful tool or asset in the enhancement of corporate competitiveness (Edvinsson & Sullivan, 1996; Stewart, 1997; Ittner & Larcker, 1998; Ulrich, 1998; Johnson, 1999; Bontis, 2001; McElory, 2002; Chen, Lin, & Chang, 2006; Chen et al., 2010).

As soon as the Financial Modernization Act (Gramm–Leach–Bliley Act or GLB Act) of 1999 was approved by the Congress, financial institutions began a wave of mergers and acquisitions. The banking industry used M&As as a means of improving their operational soundness, reducing costs and pursuing economies of scale and scope so as to boost their competitive advantage. The key to the success of mergers in the banking industry is the integration of cultural differences in the organisations (McCormick, William, & Taylor, 1995; Hayes, 2001). In the financial service industry, services and relationships are often regarded as innate characteristics that affect the performances. Managers in the financial service industry satisfy the needs of customers by contributing their knowledge and experience so as to meet the performance requirements. In contrast to other fields, the elements of intangible assets are more important. Tzeng’s (2002) study in Taiwan showed that, as many as 94.74% of banks regard the management of intellectual capital as essential. Over 81.93% of banks think it is necessary to design a measurement tool to assess the true value of banks, including the value of intellectual capital. The maintenance of customer relationship, the screening of employee quality and the integration of system technologies are all the issues that need assessment in terms of intellectual capital. Therefore, banks should acknowledge and exercise their intellectual capital, in addition to the construction of a better measurement tool to assist the management and development of intellectual capital within the organisations.

Deming (1982) indicated that when consumers have more options, old and new banks will be faced with intensified competition. Banks, as part of the financial service industry, all emphasise that they are customers-oriented and focused on service quality and efficiency, in order to win the support and repeated businesses from customers. According to the concept of service quality gap by Parasuraman, Zeithaml and Berry (1988), the implementation and inspection of the management of intellectual capital may experience a gap in quality management between customers and companies. This paper adopts the
concept proposed by Wu (2002a) that balanced scorecards (BSC) can assist companies in the understanding of value creation drivers. Wu’s (2002a) study combined with the ideas by Probst, Raub and Romhardt (2000) used BSC as the tool to examine and manage intellectual capital of banks.

This paper first reviews literature to establish a measurement tool for intellectual capital for the reference of the banking industry. Next, it uses the structure of BSC to explore the gap in the operations of intellectual capital, perceptions of employees’ performances and the emphasis placed by customers in the banking industry. An analysis is performed on the variances in association with the conversion of perceived service quality into intellectual capital of banks. Finally, this paper refers to the above-mentioned gap and formulates a strategic map of intellectual capital for banks via the BSC model. The purpose of this paper is to examine the gap between perceived quality between the front-desk employees and customers of banks and identify the gap in operations of intellectual capital. It is hoped that the research finding can serve as a reference for the learning and growth of banks, and assist them in total quality management.

**Literature review**

**Intellectual capital**

Intellectual capital is a hot topic that all companies around the world have to take heed of in the twentieth century. Stewart (1994) was the first that gave a substantial definition of intellectual capital. Intellectual capital is defined as the aggregation of all of everybody’s knowledge and competences that bring about competitive advantages and wealth creation. Edvinsson and Malone (1997a) suggested that all the information that can be converted into something valuable is intellectual capital. They indicated that intellectual capital is the hidden link between market value and book value of companies. It may be goodwill or technical capabilities. The core of intellectual capital is to allow companies to express their true value. Edvinsson and Malone (1997b) mentioned that the structure of intellectual capital is the combination of human capital and structure capital. Customer capital includes customer capital and knowledge capital.

Dzinkowski (2000) considered the total inventory of capital or the knowledge equity owned by organisations ‘intellectual capital’. Therefore, intellectual capital is the intellectual properties or intellectual assets transferred by knowledge. It can also be the mechanism of knowledge transfer. Lev (2001) indicated that intellectual capital is the key driver for the growth of organisational value. The main component is the creation of future growth. McElory (2002) suggested that the past studies on intellectual capital fail to capture ‘social innovation capital’. Therefore, he emphasises that social innovation capital boosts enterprise value with mutual trust, mutual benefits, shared knowledge and Internet norms. Bose (2004) and Adamson (2005) reiterated that in the era of knowledge economy, only knowledge-based companies can be successful.


Generally, the core value of human capital is the set of skills which an employee acquires on the job, through training and experience, and which increase organisation’s
value in the future (Edvinsson & Malone, 1997a; Grantham & Nichols, 1997; Booth & Philip, 1998; Brooking, Board, & Jones, 1998; Bontis, Dragonetti, Jacobsen, & Roos, 1999; Johnson, 1999; Knight, 1999; Dzinkowski, 2000; Pulakos, Arad, Donovan, & Plamondon, 2000; Chen, Zhu, & Xie, 2004; Jayasingam, Ansari, & Jantan, 2010). Besides, van der Meer-Kooistra and Zijlstra (2001), Wilkinson (2004), Wang and Chang (2005) and Hsu (2007) theoretically and empirically analysed the relations among human capital and other elements of intellectual capitals. The human capital which is composed of human knowledge and experience is the ruling element, which is the foundation of other elements and will indirectly affect business performance through other elements. Michael and Martin (2003) further divided organisational members into employees and managers. They argued that different roles bring different values to companies. All the members have to understand the roles they are playing to maximise the benefits of intellectual capital.

Structure capital aims to make it possible for the employees to improve the business performance on their knowledge and competence. Dzinkowski (2000) divided structure capital into intellectual properties and infrastructural assets. Michael and Martin (2003) suggested that structure capital should cover internal structure capital, including intellectual properties and corporate operational flows. Chen et al. (2004) indicated that the contents of structure capital include corporate culture, organisational structure, organisational learning, operational flows and information, to assist in the efficient operations of companies and systems. Structure capital can be divided into process capital and innovation capital (Bassi & Van Buren, 1999; Bontis et al., 1999; Johnson, 1999; Knight, 1999; Bontis, 2002; Choo & Bontis, 2002; Wang & Chang, 2005). Process capital represents the methods by which the company creates value, sample assets including management procedures and processes, administrative staff expertise and relationships with vendors. Luecke and Katz (2003) suggested that innovation capital from an organisational perspective is that generally understood as the introduction of a new thing or method.

Customer capital refers to the relationship between a corporate and its customers. Customer capital itself is the major mechanism that translates structure capital into value. Stewart (1997) indicated that the expansion of customer capital leads to relationship capital and argued that the interaction between organisations and customers consists of depth (penetration), width (coverage) and stickiness (loyalty). Dzinkowski (2000) mentioned that customer (relationship) capital means customers, customer loyalty, distribution channels, recognition of corporate partners, good contracts and license agreements. The most important of all, Stewart (1997) emphasised three key elements, which are human capital, structure capital and customer capital. Any single one of them alone does not generate intellectual capital. Rather, companies have to own all the three elements at the same time. Only with interactions between the three elements can competitive advantages be created.

**Balanced scorecards**

In the changing environment where the competition is fierce, financial information cannot fully represent the complete picture of operating performances of companies. Financial statements do not convey the information regarding corporate value. Kaplan and Norton studied 12 industries and published the concept of a BSC system. Scholey (2003) pointed out that BSC is the most influential strategic management tool over the past 75 years, and has been extensively applied to management (Kristensen & Westlund, 2004; Asan & Tanya, 2007, Chang, Tung, Huang, & Yang, 2008). Kaplan and Norton (1996) further defined BSC by combining the strategic targets and key performance indicators
set forth by companies. It is a strategic management tool that strikes a balance between long-term and short-term goals, financial and non-financial indicators, external and internal dimensions, lagging and leading indicators and subjective and objective performance indicators. Niven (2002) and Wu and Hung (2007) emphasised that balance is the core concept of this system, especially the balance between financial and non-financial indicators, internal elements (corporate flows, learning and growth) and external elements (shareholders and customers), and lagging and leading indicators.

Knight (1999) and Dror (2008) used BSC to measure and discuss the management of intellectual capital with four dimensions, i.e. financial, customers, flows, learning and growth. Wu (2002b) suggested that BSC are able to assist companies in the understanding of the drivers of value creation, and value drivers are intellectual capital (Figure 1). In other words, it is argued that BSC can serve as the structure for the management tool of intellectual capital. However, Probst, Raub and Romhardt (2000) suggested that BSC are lacking in the indicator to the inventory of intellectual capital and cannot serve as the measurements for knowledge management from the ‘knowledge’ perspectives. To sum up the past studies, there is correlation between different items of intellectual capital. The establishment of BSC as the knowledge inventory system should be fairly helpful. The management of intellectual capital and balance store cards are both strategies-oriented. They both use indicators as the management tool. The management of intellectual capital focuses on both inventory and indicators to effectiveness. It also takes into account the scope of knowledge management. On the other hand, the management of BSC introduces the concept of strategic maps and differentiates performance driving factors and result indicators so that indicator management can be more effective (Chan & Ip, 2010).

This paper attempts to combine intellectual capital and BSC as two management tools in the examination of the implementation gap in the management of intellectual capital in
the banking industry. Through the measurement of the gap in indicators for all the dimensions of intellectual capital of the banking industry with regards to its employees (internal parties) and customers (external parties), this paper establishes a management tool that integrates the concepts of intellectual capital and BSC. It is hoped that this tool can be applied in the financial service industry in total quality management, so as to effectively manage service quality and enhance operational performances.

**Research structure and design**

**Research structure**

The purpose of this paper is to establish an understanding of the gap in perceived quality between employees (internal) and customers (external) of banks concerning all the indicators of the different dimensions of intellectual capital (i.e. human capital, structure capital and customer capital), with the perspectives of BSC. In other words, the goal is to identify the gap in respective measured dimensions of intellectual capital in the eyes of employees (internal) and customers (external). This paper comes up with its structure by modifying importance performance analysis (IPA) (Figure 2) proposed by Martilla and James (1997). It also adopts the viewpoints of Hollenhorst, Olson and Fortney (1992) by dividing the research models with the average values of X- and Y-axes (Figure 3). This paper aims to identify the gap in intellectual capital that falls in Zones B and D (Figure 3) according to the self-assessment performances of employees and customers.
the levels of emphasis by customers, respectively. It is hoped that the research finding can
shed light on the ways of service quality improvements, to promote banks to learn and
grow so as to enhance their intellectual capital and boost the real enterprise value.

Research design and methodology
Based on the above-mentioned research purposes and structure, this paper proposes three
research questions as follows:

(1) Are there any significant gaps between the self-assessed performance of human
capital by employees and the levels of emphasis placed by customers on human
capital of banks?

(2) Are there any significant gaps between the levels of focus based on the employees’
self-assessed performance of structure capital and the levels of emphasis placed by
customers on structure capital?

(3) Are there any significant gaps between the levels of employees’ self-assessed
performance of customer capital and the levels of emphasis placed by customers
on customer capital?

The issue examined by this paper is the intellectual capital under the perspectives of
BSC (customer dimension, internal flow dimension, learning and growth dimension). It
includes human capital, structure capital and customer capital. This paper refers to literature
for the operational definitions and measurement variables of factors and to establish the
proposed research structure. According to the definition detailed in Article 20 of the
Banking Act, the banks in the R.O.C. can be divided into three major categories: commercial
banks, professional banks and investment trusts. This paper samples the employees and
customers of commercial banks in the Greater Taipei Area as the population. A survey
by Bureau of Financial Affairs, Ministry of Finance shows that there were a total of 40
commercial banks as of November 2006 in Taiwan.

In order to gain an understanding of the perceived gap between employees and cus-
tomers in intellectual capital on the basis of BSC, this paper samples the employees of the
top three commercial banks with the highest market shares (with a combined market share
of approximately 20%) in the commercial banking market in Taiwan. The sample of cus-
tomers is generated by selecting from the customers of the banks where these employees
work. A total of 300 questionnaires were released to the customers of the banks where the
employees work. After the elimination of ineffective questionnaires, there were a total of
248 effective questionnaires answered by the employees and 292 questionnaires answered
by the customers, with recovery rates of effective questionnaires of 82.67% and 97.33%,
respectively. The questionnaires were released from 3 January 2007 through 14 February
2007. This paper utilises SPSS (a statistical program) and IPA as the analytical tools
to perform descriptive statistical analysis, reliability analysis, $t$-test of independent
samples and importance performance analysis.

Empirical results and analysis
Validation of gaps in intellectual capital of banks
The validation of the first gap in intellectual capital: There is a significant difference
between the levels of performances of human capital self-assessed by employees and
the levels of emphasis placed by customers on human capital of banks. Table 1 shows
the test result on whether there is a gap. There are significant variances in all the 11
measurement variables of human capital ($P < 0.05$), indicating significant differences between the levels of performances in human capital self-assessed by employees and the levels of emphasis placed by customers on human capital of banks.

The validation of the second gap in intellectual capital: There is a significant difference between the levels of performances of structure capital self-assessed by employees and the levels of emphasis placed by customers on structure capital of banks. Table 2 shows the test result on whether there is a gap. There are significant variances in all the

<table>
<thead>
<tr>
<th>Questions</th>
<th>t-value</th>
<th>P-value</th>
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<tbody>
<tr>
<td>1  The staff turnover is low in general</td>
<td>−4.829</td>
<td>0.000*</td>
</tr>
<tr>
<td>2  The average education levels of the employees at our bank are above the</td>
<td>−2.131</td>
<td>0.034*</td>
</tr>
<tr>
<td>industry average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  If any employees leave, it will cause great disruptions in operations at</td>
<td>2.955</td>
<td>0.003*</td>
</tr>
<tr>
<td>our bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4  The employees of our bank can all work to their strengths</td>
<td>−7.648</td>
<td>0.000*</td>
</tr>
<tr>
<td>5  The employees of our bank often share experience and learn from others</td>
<td>−4.949</td>
<td>0.000*</td>
</tr>
<tr>
<td>6  The employees of our bank often keep themselves up to date for</td>
<td>−7.257</td>
<td>0.000*</td>
</tr>
<tr>
<td>professional skills</td>
<td></td>
<td></td>
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<tr>
<td>7  The relationships across functions at our bank are good</td>
<td>−6.369</td>
<td>0.000*</td>
</tr>
<tr>
<td>8  The team work at our banks is good</td>
<td>−8.214</td>
<td>0.000*</td>
</tr>
<tr>
<td>9  The employees at our bank are satisfied with their work</td>
<td>−7.052</td>
<td>0.000*</td>
</tr>
<tr>
<td>10 The knowledge and skills of the employees at our bank are sufficient to</td>
<td>−6.558</td>
<td>0.000*</td>
</tr>
<tr>
<td>solve problems at work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 The employees at our bank can identify with the organisational philosophy of your company</td>
<td>−5.697</td>
<td>0.000*</td>
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</table>

*$P < 0.05$. 

Table 2. Validation of quality gap in structure capital of banks.

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<tr>
<th>Question</th>
<th>t-value</th>
<th>P-value</th>
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<tbody>
<tr>
<td>1  The overall operational flows of our bank are smooth</td>
<td>−9.122</td>
<td>0.000*</td>
</tr>
<tr>
<td>2  Our bank has comprehensive databases for inquiries</td>
<td>−9.075</td>
<td>0.000*</td>
</tr>
<tr>
<td>3  Our bank tightly integrates the internal workflows with technologies</td>
<td>−6.359</td>
<td>0.000*</td>
</tr>
<tr>
<td>4  Our bank is effective in operations and management</td>
<td>−10.092</td>
<td>0.000*</td>
</tr>
<tr>
<td>5  In our bank, departments and employees can quickly support each other</td>
<td>−8.414</td>
<td>0.000*</td>
</tr>
<tr>
<td>6  Our bank emphasises the development of new technologies and the</td>
<td>−8.038</td>
<td>0.000*</td>
</tr>
<tr>
<td>introduction of new techniques in product development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7  Our bank is able to quickly develop new products to meet market</td>
<td>−5.977</td>
<td>0.000*</td>
</tr>
<tr>
<td>demands</td>
<td></td>
<td></td>
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<tr>
<td>8  The number of the completed new projects by our bank each year is above</td>
<td>−6.082</td>
<td>0.000*</td>
</tr>
<tr>
<td>industry averages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9  The R&amp;D resources allocated by our bank each year are above industry</td>
<td>−5.985</td>
<td>0.000*</td>
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<tr>
<td>averages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Our bank is able to provide an environment where employees can share</td>
<td>−8.241</td>
<td>0.000*</td>
</tr>
<tr>
<td>skills and knowledge</td>
<td></td>
<td></td>
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<tr>
<td>11 Our bank encourages employees to innovate and tolerates adventures,</td>
<td>−10.064</td>
<td>0.000*</td>
</tr>
<tr>
<td>mistakes and failures</td>
<td></td>
<td></td>
</tr>
</tbody>
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*$P < 0.05$. 

$\text{Table 1. Validation of quality gap in human capital of banks.}$

$\text{Table 2. Validation of quality gap in structure capital of banks.}$
11 measurement variables of structure capital \((P < 0.05)\), indicating significant differences between the levels of performances of structure capital self-assessed by employees and the levels of emphasis placed by customers on structure capital of banks.

**The validation of the third gap in intellectual capital:** There is a significant difference between the levels of performances of customer capital self-assessed by employees and the levels of emphasis placed by customers on customer capital of banks. Table 3 shows the test result on whether there is a gap. There are significant variances in all the 18 measurement variables of structure capital \((P < 0.05)\), except for the question ‘There are regular transactions and activities between employees and customers’ \((P = 0.117)\). This indicates significant differences between the levels of performances of structure capital self-assessed by employees and the levels of emphasis placed by customers on structure capital of banks.

**Importance performance analysis**

Among the 11 measurement variables of human capital that report significant statistical results, the two options ‘Employees are satisfied with work performances’ and ‘The average educational level of employees is above industry average’ fall in Zones B and D, respectively. This shows that resources in these two items are not properly allocated by banks (Figure 4). Among the 11 measurement variables of structure capital that report significant statistical results, the two options ‘Our bank tightly integrates the internal workflows with technologies’ and ‘Our bank is able to quickly develop new products to meet market demands’ fall in Zone D. This indicates that banks allocate too many

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<th>Question</th>
<th>(t)-value</th>
<th>(P)-value</th>
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<tbody>
<tr>
<td>1  Our bank actively develops new customers via media and campaigns</td>
<td>-4.637</td>
<td>0.000*</td>
</tr>
<tr>
<td>2  Our bank places a great focus on the responses and feedback of customers</td>
<td>-4.130</td>
<td>0.000*</td>
</tr>
<tr>
<td>3  Our bank has special projects to serve customers so we are more competitive than our peers</td>
<td>-6.923</td>
<td>0.000*</td>
</tr>
<tr>
<td>4  Our bank can satisfy the needs of customers</td>
<td>-7.087</td>
<td>0.000*</td>
</tr>
<tr>
<td>5  Our bank is customers-oriented</td>
<td>-5.792</td>
<td>0.000*</td>
</tr>
<tr>
<td>6  Our bank provides value-added services to customers</td>
<td>-5.676</td>
<td>0.000*</td>
</tr>
<tr>
<td>7  The image and branding of our bank is better than industry averages</td>
<td>-4.648</td>
<td>0.000*</td>
</tr>
<tr>
<td>8  Our bank has a good market image and reputation</td>
<td>-5.505</td>
<td>0.000*</td>
</tr>
<tr>
<td>9  The quality of the products or services offered by our bank is high</td>
<td>-6.522</td>
<td>0.000*</td>
</tr>
<tr>
<td>10 The customers of our bank are highly loyal</td>
<td>-6.609</td>
<td>0.000*</td>
</tr>
<tr>
<td>11 The rate of complaints from customers is low at our bank</td>
<td>-8.570</td>
<td>0.000*</td>
</tr>
<tr>
<td>12 The customers of our bank are highly satisfied with our services</td>
<td>-7.817</td>
<td>0.000*</td>
</tr>
<tr>
<td>13 The customers of our bank are highly satisfied with our products</td>
<td>-10.256</td>
<td>0.000*</td>
</tr>
<tr>
<td>14 The probability for customers of our banks to repeatedly purchase our products is high</td>
<td>-4.896</td>
<td>0.000*</td>
</tr>
<tr>
<td>15 The interactions between the employees of our banks and our customers are frequent</td>
<td>-1.572</td>
<td>0.117</td>
</tr>
<tr>
<td>16 Our bank places more emphasis on customers needs than on company profits</td>
<td>-6.426</td>
<td>0.000*</td>
</tr>
<tr>
<td>17 The employees of our bank have good interactions with customers</td>
<td>-3.849</td>
<td>0.000*</td>
</tr>
<tr>
<td>18 The employees of our bank provide transactional services with great accuracy and efficiency.</td>
<td>-4.748</td>
<td>0.000**</td>
</tr>
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</table>

\({*}P < 0.05.\)
resources in the item of structure capital not emphasised by customers (Figure 5). Among the 18 measurement variables of structure capital that report significant statistical results, the options ‘Our bank has a good market image and reputation’, ‘The rate of complaints from customers is low at our bank’ and ‘The customers of our bank are highly satisfied with our services’ fall in Zone B. Meanwhile, the option ‘The probability for customers of our banks to repeatedly purchase our products is high’ falls in Zone D.

**Conclusions and suggestions**

The empirical analysis shows that there are perceived gaps in human capital of banks. The option ‘Employees are satisfied with work performances’ is considered to be important by customers but not by bank personnel. On the other hand, banking personnel believe that their education level is important, but it is not emphasised by customers. This may be because that the banking industry in Taiwan is conservative at work. They select personnel based on academic background and written resumes; however, this approach does not seem to meet with the expectations of customers. It is an issue worth noting whether the screening of employees should be based only on examination results and academic achievements. Meanwhile, the indicator that customers emphasise the most is ‘The knowledge and skills of the employees at our bank are sufficient to solve problems at work’. Therefore, in addition to adhering to the conventional wisdom of conservatism, banks should consider whether they should add innovative services and more sophisticated service contents in the work attitudes of employees and in operational management. Banks of modern times should place a focus on the management of service quality by providing comprehensive internal training so as to enhance their professional competences. Traditionally, the studies on human resource management all agree that employees’ high satisfaction with work naturally boosts productivity. Unsatisfied employees have low morale; as a result, performances may deteriorate and organisations will suffer
greatly (Fitzgerald, 1996; Buchbinder, 1998; Moneva & Ortas, 2010). Meanwhile, Cheung and Scherling (1999) suggested that the redesign of work procedures and job characteristics, the improvement of team dynamics, the raising of salaries and promotions all help to boost the job satisfaction of employees. In other words, modern banks should endeavour to ensure job satisfaction of employees so as to improve their service quality and performances across-the-board. It is not advisable to manage human resources in the way manufacturing industries do by emphasising efficiency and productive value. Chen et al. (2004) also indicated that human capital is the foundation of intellectual capital. High satisfaction with work helps to boost morale and improve work attitudes of employees. Banks are advised to be engaged in TQM by following the above suggestions.

This paper finds that there are indeed significant variances between the levels of performances in structure capital self-assessed by employees and the levels of emphasis placed by customers on structure capital of banks. The options ‘Our bank tightly integrates the internal workflows with technologies’ and ‘Our bank is able to quickly develop new products to meet market demands’ fall in Zone D. Although banks believe that they have done a great job in the development of IT techniques and innovative products over the recent years (Salleh, Jusoh, & Isa, 2010), customers do not value this as much. This is in line with the finding of Shih (2008). Despite a focus on innovation, the financial service industry in essence is a traditional service industry that is relationships-oriented. Customer satisfaction is hinged on sufficient internal training and intensity of R&D efforts, rather than advanced digital systems in operations and support. Therefore, banks should refer to the finding of this paper in the development of internal flow capital and quality management, specially avoiding over-investments on the IT interface that customers use because it bumps up operational costs for no benefits. According to Lin (1991), the development of a quality control information system should focus on management, planning and control issues. Meanwhile, customers place a heavy emphasis on ‘The customers of our bank are highly satisfied with our services’, but banks do not really care ‘whether products can meet the needs of customers’. Michael and Martin (2003) suggested that structure capital covers dimensions in marketing and management. The allocations of flow capital are the leading indicators to performances, highly relevant to the future growth of companies. Therefore, banks should review whether the products they provide are what customers need, in order to better the quality of their structure capital.

This paper finds (Figure 6) that as far as the intellectual capital of the banking industry in Taiwan is concerned, the three options ‘Our bank has a good market image and

![Figure 6. Quadrants of customer capital of Taiwanese banks.](image-url)
reputation’, ‘The rate of complaints from customers is low at our bank’ and ‘The customers of our bank are highly satisfied with our services’ fall in Zone B. This indicates that the banks do not believe it has done a good job in the indicators emphasised by customers. In fact, the market structure in the banking industry is highly competitive. As soon as the reputation, complaint rate of customers and satisfaction with products fall below customers’ expectations, banks are likely to lose clients fast. Chen et al. (2004) suggested that the loss of customers will quickly deteriorate the market value and future performances of companies. Also, customer capital is the key determinant for other intellectual capital to convert into market value and corporate performance (Dzinknowski, 2000; Chen et al., 2004; Shih, 2008; Shih, Liu, Jones, & Lin, 2010). All the finding shows the importance of customer capital to banks.

Meanwhile, the option ‘The probability for customers of our banks to repeatedly purchase our products is high’ falls in Zone D. Banks are obsessed about whether customers repeatedly select the services they provide. On the contrary, customers do not care too much about this indicator. This may be due to the switching cost or a relationship inertia that keeps customers with the banks. When the dissatisfaction accumulates to a critical point, or other banks offer better incentives, customers would immediately walk away. If the option ‘The probability for customers of our banks to repeatedly purchase

![Figure 7. TQM strategic map of intellectual capital of banks.](image_url)
our products is high’ is used as an additional indicator to the performance of employees, employees would work hard to push for repeated purchases. However, it may only push employees to use their techniques on customers. Banks do not pay as much attention to ‘response and feedback of customers’ and the actual ‘levels of satisfaction’. Customers place more emphasis on these two items and banks should work harder on them.

The management of intellectual capital in companies with the BSC system does not only link the intellectual capital with financial performances, but also assists the banking industry to control the interactivity of different types of intellectual capital. The close integration of BSC and intellectual capital initiates the improvements across-the-board of operating performances and quality. This paper links the quality gap of the three types of intellectual capital of the banking industry with the relevant BSC. It also combines the measurement indicators and provides its finding as a hands-on reference to the management of banks. According to the empirical results, the questions ‘Employees are rather satisfied with work’ and ‘The average education level of employees is above industry average’ are the core measurement of employees for learning and growth as a dimension of human capital in BSC. The questions ‘Our bank tightly integrates the internal workflows with technologies’ and ‘Our bank is able to quickly develop new products to meet market demands’ are the core measurement of operational flows as a dimension of internal flows in BSC, as far as structure capital is concerned. The questions ‘Our bank has a good market image and reputation’, ‘The rate of complaints from customers is low at our bank’, ‘The customers of our bank are highly satisfied with our services’ and ‘The probability for customers of our banks to repeatedly purchase our products is high’ are the core measurement of customer value statement and customer core measurement as a dimension of innovative flows are concerned. This paper highlights the potential gap in the TQM program of the banking industry for intellectual capital and structures a BSC system (Figure 7). Managers in the banking industry may use BSC as an effective measurement tool and apply them to make gradual improvements in the dimension of learning and growth. This will narrow the gap in implementations for intellectual capital, boost the financial performances and hence increase the enterprise value of banks.

References


