

# Towards Refining Digital Divide Strategies via Strategy Gap Analysis- The Method and Case Study

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## ABSTRACT

*Research findings, government reports, and surveys conducted by well-known international organizations have noted that outcomes of most projects aiming at reducing digital divides are not as effective as expected. The literature also indicates that the difficulties of bridging digital divides, no matter in the developed, developing, or under-developed countries, are due to the absence of causal links between formulating, implementing, and evaluating digital divide strategies. To ensure achieving the effectiveness of digital divide strategies, governments need to leverage their capabilities in strategy formulation and performance measurement beyond simply initiating policies and operating action plans. However, from both the research works and government practices, little help can be found to assist governments in detecting shortcomings of their strategies. The goal of this paper is to propose a strategy gap analysis method for the refinement of digital divide strategies. Based on the balanced scorecard and strategy map models, digital divide strategies are analyzed and both horizontal and vertical strategic gaps are identified, determined and discussed. A case study regarding digital divide strategies of Taiwan is conducted to demonstrate the feasibility and usefulness of the proposed strategy gap analysis approach.*

**Keywords:** digital divide, strategy gap analysis, balanced scorecard, strategy map

## INTRODUCTION

The term “digital divide” (DD) was brought up to emphasize the violations of the original intentions to promote the use of information and communication technologies (ICTs). Basically, the digital divide reflects the existence of a gap between those who gain effective access to universal information and communication services and those who do not (Adams, 2000). It has been considered that, as a risk factor, DD will slow down a country’s progress in the adoption of emerging ICTs and will further hinder the impetus of E-government. As a result, both the country and people will lose the power in capturing digital opportunities and creating competitive advantages (Bridges.org, 2001, Bhatnagar & World Bank Consultant, 2004, Hollifield & Donnermeyer, 2003). Unfortunately, research findings have indicated that the efforts for reducing digital divides were inconvincible (Bhatnagar & World Bank Consultant, 2004, Jalava & Pohjola, 2002, Bertot, 2003, ITU, 2005, Yu & Wang, 2004, 2005). The radical reasons are due to the absence of the balance between strategizing, coordination and action (Bhatnagar & World Bank Consultant, 2004) and the absence of causal links between formulating, implementing, and evaluating DD strategies (Yu & Wang, 2005). For ensuring the achievement of the DD strategy effectiveness, governments need to leverage their capabilities in strategy formulation and performance measurement, as well as in strategy gaps control beyond only focusing on the initiation and execution of policies and action plans. In other words, from the strategic management viewpoint, strategy gaps between objective-action-performance form the major barriers in the efforts of reducing digital divides. An appropriate strategic management process is in need to identify and remedy DD related strategy gaps and in consequence to advance the quality of DD strategies. However, most of the earlier strategic management tools focused on identifying gaps during the strategy initiation and evaluation phases. The management and improvement of strategy qualities were constantly overlooked. The research literature, on the other hand, shows little help to assist governments in detecting the shortcomings as well as repairing the broken links of their strategies.

Aiming at filling the literature gap, this research proposes a strategy gap analysis method for the refinement of DD strategies. Based on the balanced scorecard (BSC) and strategy map models, both horizontal and vertical strategic gaps are identified, determined and discussed. A case study regarding digital divide strategies of Taiwan is conducted to demonstrate the feasibility and usefulness of the proposed approach. In the following, this paper reviews the concept of the BSC, the DD-BSC framework, the strategy map, and the concept of strategy gap in section 2. In section 3, the process and the steps of strategic gap analysis are explored in detail. A case study demonstrating how a nation could adopt and utilize the proposed method to refine DD strategies is presented in section 4. The final section states the concluding remarks and the direction of future studies.

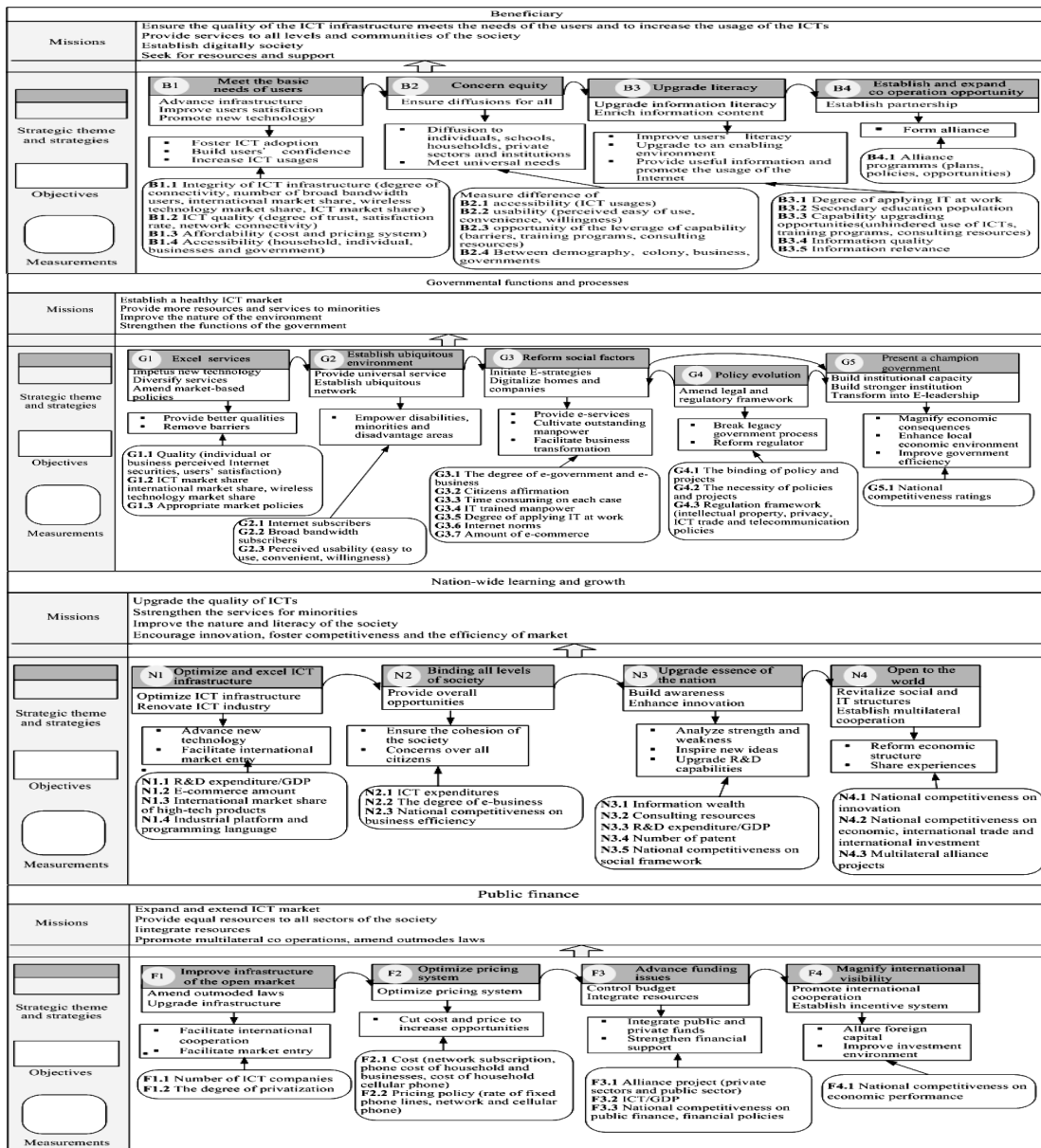
## LITERATURE REVIEW

In this section, concepts of the BSC, the strategy map, and the strategy gap, the DD-BSC framework, as well as why the BSC based strategy map is adapted to analyze strategy gaps are briefly described.

### The balanced scorecard

The BSC has been recognized as one of the most adopted tools in pursuing organizational competitiveness (Bulter et al., 1997, Chan, 2004, Voelker et al., 2001). The BSC is also well known by (1) its clarification of the strategies and consistence of agreement, (2) its opportunities to broadcast and communicate the vision of the organization, (3) its parallelism between the strategies and the organization or individuals goals, (4) its cooperation with the budget and non-financial goals of an organization, and (5) its valuable feedbacks obtained from a continuous reviewing process (Protti, 2002).

In addition to the private or profit organizations, the BSC has been widely practiced in the non-profit/public organizations and has demonstrated dramatic improvements in developing strategies, actions and performance measures (Atkinson and McCrindell, 1997, Kloot and Martin, 2000, Levetan, 2000, McAdam and Walker, 2003). Nevertheless, the BSC alone would not guarantee the seamless and the completeness of the strategies. To ensure the qualities of the strategies, the strategic gaps should be identified and controlled during the strategy formulation and the performance measurement processes (Yu, 2007). A systematic approach that will take advantage of the present merits of the BSC and in the meantime, refine the qualities of the strategies is worth further studying.



**Figure 1. The DD-BSC Framework**

## The DD-BSC framework

For simultaneously analyzing domestic and international divides, Yu and Wang (2004) suggested that ICT, equal opportunities, information society and national competitiveness were indispensable to measure and evaluate the status of DD. The four DD dimensions were later incorporated with the BSC to form the strategic management platform for reducing DD. The DD-BSC framework, as shown in figure 1, contains Beneficiary, Governmental Functions and Process, Nation-Wide Learning and Growth, and Public Finance perspectives to guide the formulation and performance management of DD strategies (Yu & Wang, 2005). The visions, missions, strategic themes and strategic objectives expressed in the initial DD-BSC framework reflect common views among most of the developed countries as well as well-known international organizations, and can be served as generic models for the adoption and adaptation to specific countries. The strategic themes represent the major and important issues to reduce DD and each strategic theme contains only critical strategies.

In the DD-BSC framework, each perspective takes the four DD dimensions into considerations while formulating strategies. The objectives and strategies must be related and the achievements of the objectives are evaluated by the key success factors (KSFs). Aiming at providing governments with an easy way to effectively manage their DD strategies, the DD-BSC framework has been applied in Taiwan and eventually shown its effectiveness in initiating as well as managing DD strategies.

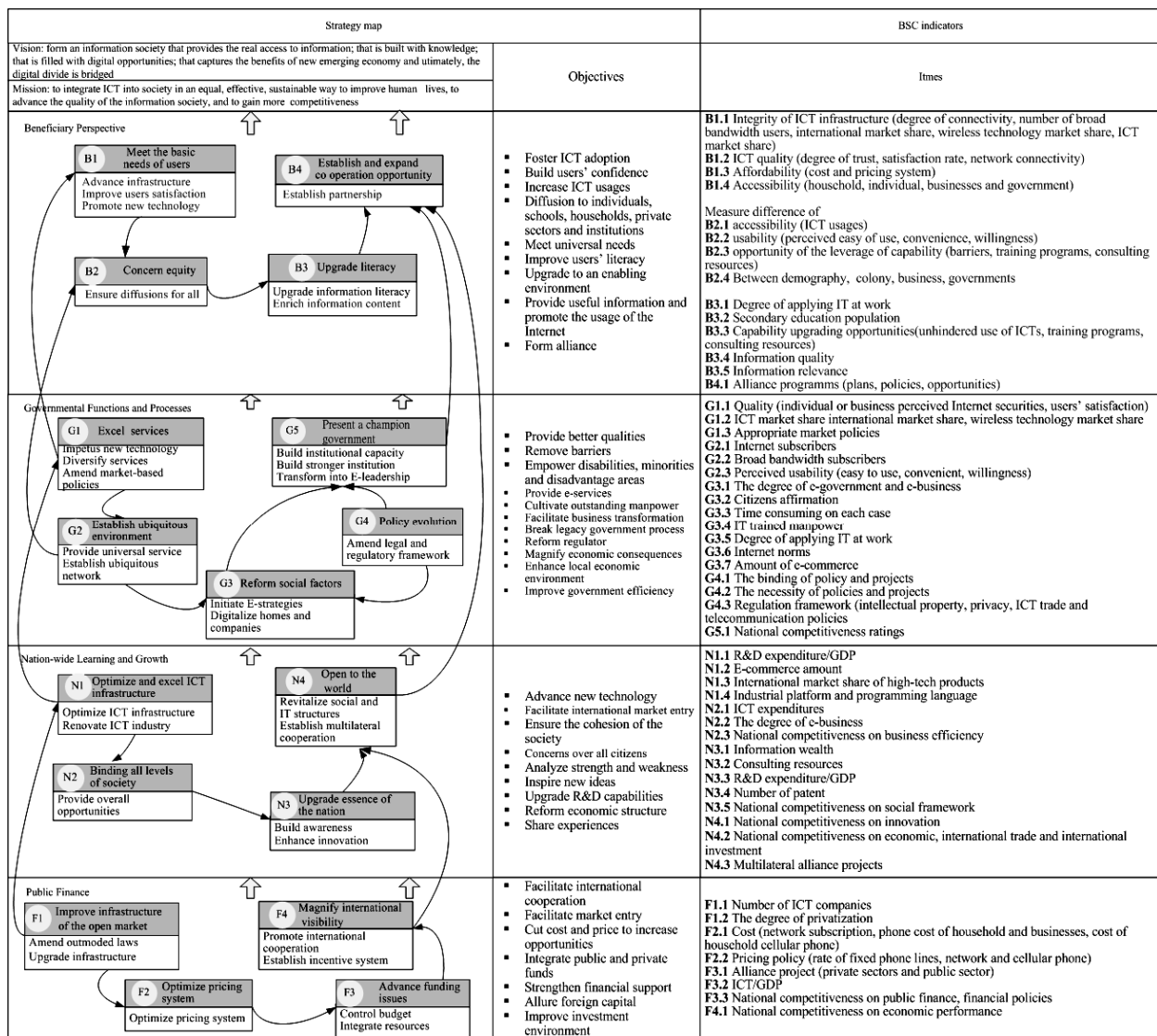


Figure 2. The DD-BSC strategy map

## The strategy map

In association with the DD-BSC framework, Yu and Wang developed the generic DD-BSC strategy map (as shown in figure 2) to demonstrate the cause-and-effect relationships among DD strategies.

The strategy map is a visual representation of the strategies. It provides a powerful way to show the relationships between each of the perspectives and to link the strategies to the organization's present positions and the desirable

future positions (Kaplan & Norton, 2000, Irwin 2002). Kaplan & Norton (2000) suggested that the best way to build strategy maps is top-down. Under this construction, the map will highlight which specific improvements will lead to the desired outcomes. Moreover, if a strategy is missing, the strategy is possibly flawed and the strategy map often exposes the gaps so that the executives can take early corrective actions (Kaplan & Norton, 2000, 2004). Although the literatures demonstrate the importance of strategy map and its usefulness for locating strategy gaps, prior researches did not provide a holistic and systematic methodology for us to follow. In this research, we develop a methodology in the context of bridging DD to fill up the absence. In addition to the top-down vertical analysis, we also propose a horizontal analysis to ensure the completeness of the strategies.

### The strategy gap

Strategic gaps in the literature (Harrison, 1989) focused mainly on extrapolating the differences between the desired future positions of the organization and its current positions (Bates & Dillard, 1992) and the definitions have never been unified. Furthermore, the methodology of locating strategy gaps is seldom addressed in the literature.

The literatures review of the strategic gaps analysis revealed that the definitions of the gaps were too internally and financially focused; consumers or the customers were the major stakeholders considered in the strategy formulation; and the gaps are determined only in the strategic analysis phase or strategic implementation phase. Furthermore, the approaches provided in the previous work would not establish the rationality, the logics, as well as the completeness of the strategies and their objectives. Nevertheless, this issue has rarely been touched, if not totally absent. Yu (2007) applied the strategy gap analysis to e-government strategies and was probably the first attempt to start the in-depth examination of the strategies in the public sector.

The literature reviews highlight the importance of the concept of strategic management to narrow DD, the usefulness of the BSC in the integration of visions, missions, strategies, and strategic objectives of reducing DD. However, the literatures do not provide systematic procedures to manage as well as to evaluate the values, the qualities and the effectiveness of the strategies. Although the literatures addressed the gaps that might be emerged during different phases of strategic management, major issues such as the completeness or the quality assurance of the strategies were constantly overlooked. How to refine the strategies of reducing digital divides remains as an important issue to delve into.

## STRATEGY GAP ANALYSES

### Determining strategy formulation gaps

It is suggested that the governments take the DD-BSC framework and the generic strategy map as the templates to develop their own DD-related balanced scorecard and strategy maps. The way the strategy map designed equips two ways to locate DD strategy formulation gaps. The horizontal gaps analyses are to streamline the objectives with the strategies. The horizontal strategic theme (ST) gap analysis and the horizontal strategic objective (SO) gap analysis are two important analyses complementing each other. The former confirms the integrity and clearness of the strategies, while the latter observes whether the strategies are measurable. The vertical strategic theme gaps would be determined by examining the cause-and-effect relationships among strategic themes. The vertical strategic objectives analysis detects the outcomes being implemented at lower levels (Kaplan & Norton, 2000). The presence of vertical strategic gaps indicates that it would be difficult to streamline and connect strategy outcomes among perspectives; accordingly, the effectiveness of the strategies will be downgraded.

### Horizontal and vertical gaps analyses – types and definitions

In practice, figure 2 will be adopted to compare with the actual strategy map to locate horizontal gaps. Table 1 defines four types of horizontal strategy gaps and five types of horizontal strategic objective gaps. The “if” statements demonstrate the logics or the criteria of how the gaps are located; the statements in italic are the tips for the comparisons.

**Table 1. Acronym, definition and method to locate horizontal ST/SO gaps**

Gap Type	Description	Causes	Method and criteria to locate the gap
HSTG-I	Type I horizontal strategic theme gap	One of the strategies in the ideal strategic theme is not found in the current strategic theme	IF NOT EXIST (IS in CS): <i>Comparing current strategies with those of the leading countries</i>
HSTG-II	Type II horizontal strategic theme gap	Previous strategies are ineffective.	IF UNACCEPTABLE (previous outcome): <i>Reviewing outcomes of strategies of the current term.</i>
HSTG-III	Type III horizontal strategic theme gap	Missing of themes that are unique to the nation	IF NOT EXIST (CS unique to nation): <i>Reviewing opinions of the public or experts collect special needs of the nation</i>
HSTG-IV	Type IV horizontal	Not clearly defined	IF NOT FOUND (objective): <i>Comparing current</i>

	strategic theme gap	strategic theme	<i>objectives with the objectives in the generic model. Reviewing opinions of the public or experts to verify if the strategies are fully understood</i>
HSOG-I	Type I horizontal strategic objective gap	Missing objectives	IF NOT EXIST (IO in CO) : <i>Comparing current strategies with those of the leading countries</i>
HSOG-II	Type II horizontal strategic objective gap	Missing of objectives that are unique to the nation	IF NOT EXIST (CO unique to nation): <i>Evaluating the special needs of the nation</i>
HSOG-III	Type III horizontal strategic objective gap	Objectives are not coupled with action plans	IF NOT EXIST (proper actions): <i>Reviewing action plans against objectives</i>
HSOG-IV	Type IV horizontal strategic objective gap	No measurements	IF NOT FOUND (measurement)
HSOG-V	Type V horizontal strategic objective gap	Current actions are inefficient	IF UNACCEPTABLE (current outcome) : <i>Reviewing governments official documents to compare action outcomes with the objectives</i>

As stated before, the ideal strategies are the common views extracted from the selected countries or organizations. Therefore, if an ideal strategy is not listed as one of the strategies in the current strategic theme of a nation, the strategies of the perspective are not complete. A TYPE I horizontal ST gap (HSTG-I) is then marked. If the outcomes of the previous strategies can not lead an organization to its mission and vision or to reverse the inferior status, it implies that the strategies are not efficient, thus a TYPE II horizontal ST gap (HSTG-II) should also be placed. A strategy that is considered specifically important to the nation but is not listed in the current theme will be marked HSTG-III. If a strategic theme is considered not clearly defined, then a TYPE IV horizontal ST gap (HSTG-IV) is marked. The term “not clearly defined” refers to no objectives, no measurements or no action plans. In the horizontal strategic objective gaps analyses, HSOG-I indicates if the ideal objectives are not listed in the current theme. If the objectives are specific to a nation but are not listed, it is recognized as HSOG-II. Strategies are translated to actions; therefore, if the objectives are not coupled with proper actions, there exist HSOG-III gaps. If the actions can not be measured, HSOG-IV is marked; and finally, if the performances of the strategies are not satisfied, the gaps are recognized as HSOG-V.

The main purpose of vertical gaps analyses is to examine the cause-and-effect relationships among strategies and between perspectives. Table 2 defines two types of vertical strategic theme gaps and three types of vertical objective gaps. In practice, we will go through each of the strategy and examine if the links are established both to and from strategic themes within or across perspectives. If a strategic theme in a perspective is found not linked to any strategic theme in the upper level perspective theme, it is marked VSTG-I. On the contrary, if no link is found to the theme itself, a VSTG-II will be marked to this strategic theme as well. In other words, a strategic theme might be recognized as VSTG-I and VSTG-II at the same time. The same procedure is applied to strategic objectives as well.

**Table 2. Acronym, definition and method to locate vertical ST/SO gaps**

Gap Type	Description	Causes	Method to locate the gap
VSTG-I	Type I vertical strategic theme gap	Strategies in a strategic theme are not complete and the theme is not possible to support other strategic themes.	IF NO-LINK (CS, UPPER-LEVEL-CS) : <i>Examine strategies and Establishing and checking the cause-and-effect relationships among strategic themes.</i>
VSTG-II	Type II vertical strategic theme gap	A strategic theme is found not supported by any strategic theme from the lower level perspective	IF NO-LINK (CS, LOWER-LEVEL-CS) : <i>Establishing and checking the cause-and-effect relationships among strategic themes.</i>
VSOG-I	Type I vertical strategic objective gap	Strategic objectives of the strategic themes in a perspective is found not linked to any strategic theme in the upper level perspective	IF NO-LINK (CO, UPPER-LEVEL-CO) : <i>Establishing and checking cause-and-effect relationships among strategic objectives</i>
VSOG-II	Type II vertical strategic objective gap	Strategic objectives of the strategic themes are not supported by any strategic objectives from the lower level perspective	IF NO-LINK (CO, LOWER-LEVEL-CO) : <i>Establishing and checking the cause-and-effect relationships among strategic objectives</i>
VSOG-III	Type III vertical strategic objective gap	The outcomes of a strategy are found not efficient to possibly support the strategies on the upper level perspectives	IF NOT-EQUAL (CO, GOAL): <i>Comparing the measurements with the associated goals (outcome vs. outcome) based upon the cause-and-effect rules</i>

## CASE STUDY – LOCATING DD STRATEGY FORMULATION GAPS of TAIWAN

The method of locating strategy gaps proposed in this research is applied to Taiwan. To build the current strategy map of Taiwan, this research collected strategies from all available resources including policies, projects and strategies of various divisions in the central government (such as the task force of digital divide, National Information and Communication Initiative – NICI, etc.), the annual reports of these committees or councils, resources on web pages of all levels of governments, e-government white papers, as well as the reports published by numerous DD-related seminars or colloquiums. To identify horizontal gaps, the DD-BSC of Taiwan is transformed into figure 3 and within which the gaps are framed with dotted lines. The gap types are indicated in the corresponding cells.

After comparing figure 3 with the generic strategy map (as figure 2), findings are outlined below:

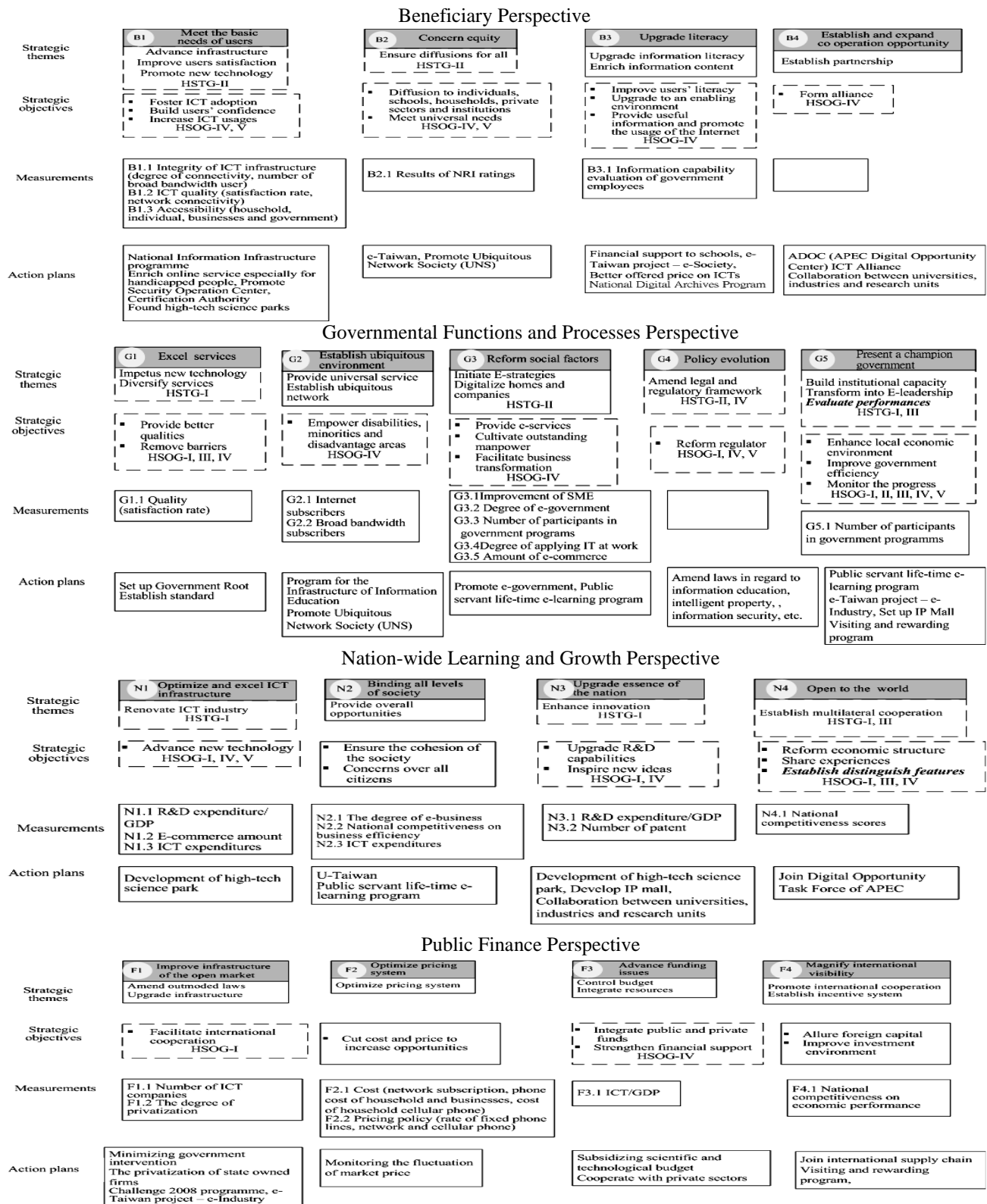
1. Missing strategic themes. As shown in figure 3, “Amend market-based policies”, “Build stronger institution”, “Optimize ICT infrastructure”, “Build awareness” and “Revitalize social and IT structures” are listed as the ideal strategies but are missing in the case of Taiwan.
2. Inefficient strategies. The theme “Reform social factors” is then marked HSTG-II to indicate that the strategies are ineffective since the result of 2007-2008 network readiness index (NRI) is far behind the government has expected. When we further examine the NRI structure, the components include market environment, regulatory environment, infrastructure environment, readiness and usages of individual, businesses and governments. Under these circumstances, strategic themes such as “Meet the basic needs of users”, “Policy evolution”, “Optimize and excel ICT infrastructure” should all be marked with both HSTG-II and HSOG-V.
3. Missing unique strategic themes. It has been suggested that Taiwanese government should initiate “Evaluate performance” strategy to trace the execution of DD projects (Tseng & Wu, 2001). However, the strategy seemed not shaping.
4. Unclear strategic themes. “Amend legal and regulatory framework” is marked HSTG-IV because the strategy is not. As a result, the government may overlook severe defects and not taking proper actions.
5. Missing objectives. Six HSOG-I gaps are located due to the ideal objectives are not applied in the case of Taiwan.
6. Missing strategic objectives. If a strategy is marked HSTG-II, its objective should be marked HSOG-II so that refinement for completeness and proper actions would be taken to the strategy. Accordingly, for those strategic themes that have marked HSTG-I imply the lack of objectives and actions to implement the strategies. Thereby, HSOG-I and HSOG-III should be marked to the corresponding strategic objectives.
7. The missing of appropriate measurements. In all, we located thirteen HSOG-IV gaps in the case of Taiwan. In figure 3, some strategies are showing no measurements at all.

The last step is to locate vertical strategic theme gaps of Taiwan. We first examine the completeness of the strategies in each strategic theme. If a strategy is missing when compare with the generic model, it is most likely that the strategic theme will not support the implementations of other strategies. Hence, VSTG-I gap is marked in the corresponding theme. Accordingly, once a VSTG-I gap is located, a VSTG-II gap should be marked in a theme at the end side of an arrow. In figure 4, there are five VSTG-I gaps and ten VSTG-II gaps located. Once a gap is marked, the strategic theme as well as the arrows from the theme is represented with dotted lines to indicate its weakness to support other strategies. Similar process is applied to vertical strategic objective gaps analysis. In figure 5, five VSOG-I gaps and fifteen VSOG-II gaps are located. In fact, once a VSOG-I gap is marked, the impacts are like a reaction chain, all strategies need to be reexamined in the case of Taiwan. For those strategic themes that were determined ineffective during horizontal gaps analyses, the theme will be marked VSOG-III to indicate the weak outcomes. The indications of the gap types provide the guidance for governments to take proper actions to fill up the gaps. The application of the models to Taiwan shows the effectiveness of the strategy gap analysis in the context of reducing digital divides.

## CONCLUSIONS

The contributions of this paper are in the following aspects: (1) a generalized DD-BSC strategy framework is proposed for comparing DD strategy efforts, (2) an adaptable strategy gap analysis method and procedure for locating horizontal and vertical strategic gaps is provided, and (3) by adopting the proposed approach to a specific country, the result reveals that the government will be able to comprehend weaknesses and shortcomings in strategy development through locating strategic gaps, and to refine strategies by taking corrective actions. In the case of Taiwan, simply adapting generic gap models has proved to be efficient and effective, and the outcome verifies the feasibility and importance of the strategic gap analyses.

More field experiments and validations will be conducted in the future. Although we have listed the measurement for the evaluations of the DD strategies, the gap analysis in the performance measurement stage has not yet addressed. Future study will also continue in the development of the DD status and strategy measurement. The performance gaps will be identified, defined, and classified as well.



**Figure 3. Horizontal presentations of strategy map of Taiwan**

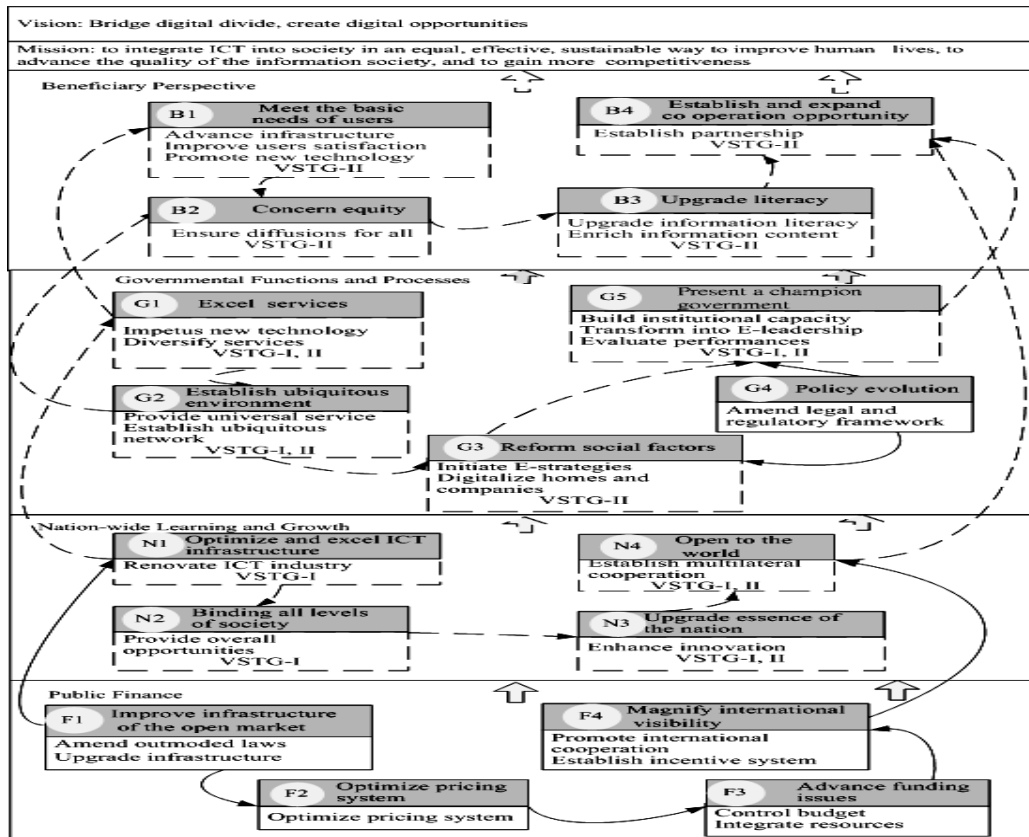


Figure 4. Vertical strategic theme gaps of Taiwan

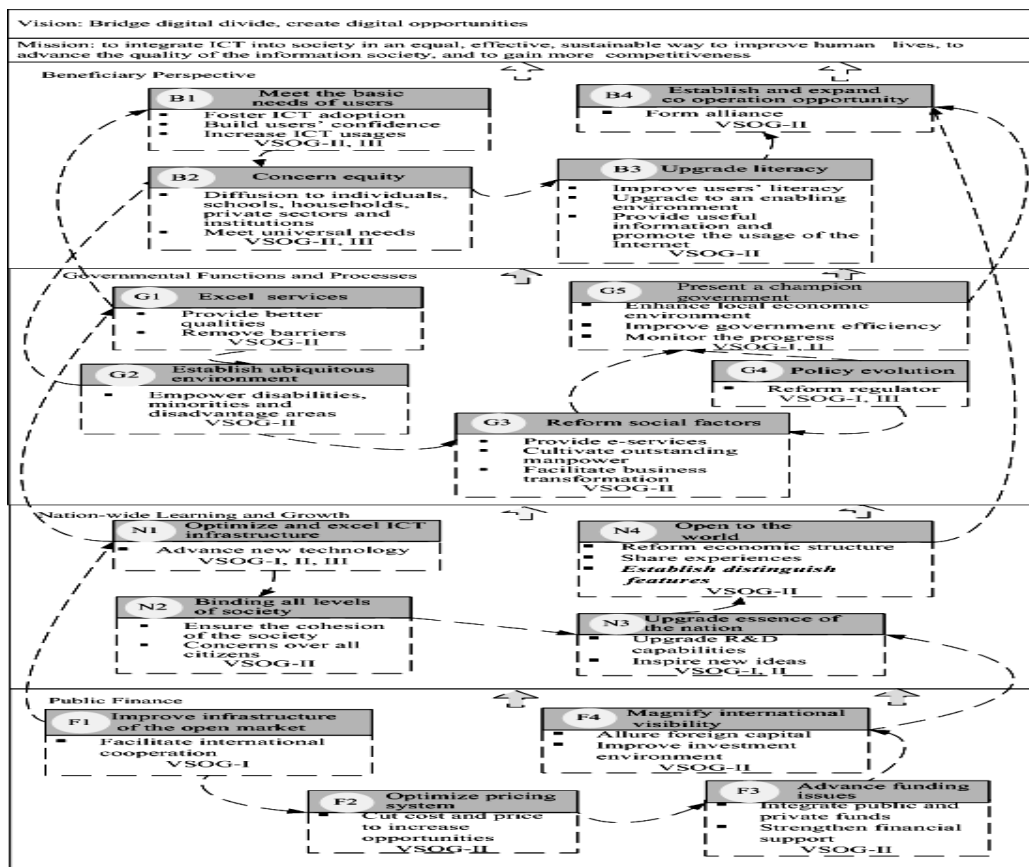


Figure 5. Vertical strategic objective gaps of Taiwan

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