

Island Economy and Third Sector :

Tertiary Economy Innovation and R&D :

Path of Sustainable Development for Small Islands Limited Resource Service Sector Context?

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Outline and Problem Setting of the Study :

Innovation started evolving as a key discipline of research over the twentieth century. Initially, innovation research was predominantly focused on new product development approach for commercializing ideas and inventions mainly in the manufacturing industry. With the increasing growth of services in today's organizations and economy, the importance of understanding service innovation concepts and practices has been on the rise.

Service science is a new discipline arising from the rapid development of services across the industrial world. Service Science Management Engineering, concurrently, emerged as a response to the lack of effort in service innovation despite the increasing importance of the service sector itself. Though currently booming sales in services, the level of R&D funding for the service sector is surprisingly trivial. Theoretical and empirical consensus is counted to promote the concerning regarding the effect of service/innovation on growth process.

Resource endowment is one of the crucial determinants for economic performance. Cape Verde, an island economy context and the chosen context of this thesis is, typically, characterized by limited resources of economic activity and by the specialization on services. For the prosperous future, the country is enforcing transformation toward sustainable economic growth by developing competitive clusters nurtured specially with knowledge commodity in areas like Creative economies, ICT and Finance.

In Economic Growth theory, output increase and improved productivity of production input caused by capital accumulation including social overhead capital, population and therefore labor growth, technological progress, and human capital accumulation had been focused and studied as drivers of growth. Economic growth effects caused by the factors mentioned above had been studied and confirmed both by numerous theoretical and empirical investigations.

However, accumulations of capital including social overhead capital or technological progress promoting improvement of a production process innovation need a huge amount of fund. For almost all of the under developed countries including Cape Verde, finance of such growth funds is inevitably accompanied with considerable difficulties. And this is one of the main causes of the non-accomplishment of the world growth convergence and stagnant growth observed in many under-developed countries.

In this study, innovations in tertiary sector are proposed as effective solutions in order to overcome above mentioned problems and investigation had been promoted to clarify effectiveness of proposed measures from perspectives of service management and economic growth. By extending the analytical results of the precedent studies, theoretical and qualitative analysis had been at first carried out : case study, questioner, and interviews to Japanese innovative corporations had been conducted in order to reinforce the hypothesis obtained from above stated investigations.

In a theoretical investigation of economic growth, this study introduced an additional sector of service pro-

duction into a leading growth theoretical model that incorporates R&D activities, and constructed three sectors economic growth model. By utilizing the model, an investigation on the growth effects of R&D and introduction of new products in tertiary sector had been commenced. In parts of empirical studies, a regression analysis on the per-capita GDP equation in a steady growth equilibrium, covariance structure analysis on main variable appears in the model, and regression analysis on the macro-production function incorporates inventions of new products are followed in order to certify the theoretical hypothesis obtained in the theoretical investigations.

The objects of this thesis are summarized as follows :

1. To analyze an effectiveness of service innovations on sustainable development and economic growth of limited resource economies.
2. To identify the effective efforts of service innovations for limited resource economies including Cape Verde.
3. To indicate evidences of the growth economic effects on service innovations and expansion of service sector for sustainable development and growth of the economies characterized by limited resources.
4. To set policy implications and compose policy proposal to limited resource economies including Cape Verde.

Contents of Each Chapter :

Chapter 1. Introduction set the bases of which perspective the investigation is carried. Then Chapter 2 attempts identify the kind of Service Innovation Effort that can lead to the transformation on limited resource economies. The focus goes on the quality concern at first and the identification of potential opportunities to enhance value of service and the need to measure performance are followed. A very important aspect of the Human resources in Service Operations essence is examined then. Furthermore, this chapter advances some information about the Quaternary System, questioning the advanced level it is taking nowadays and, inevitably, Japanese example is introduced by the “Omotenashi”, the “Sanpoyoshi” Management Philosophy, the Nihon Service Award and Logistics Service example.

Chapter 3 evaluates the genesis process of innovative service : finding out alternatives thanks to the idea of an infinity source of « Innovative Service » ; that is affected by time so cyclical momentums definitions of innovative services gives a retrospective and generating new service process under provider and user perspectives requires examination. By interviewing 91 leading companies in Kyoto, resources, information, and effort which lead to the service innovations had been investigated and clarified. Furthermore, a precise cross case study on one of the examples of retrospective innovation had been executed to fix empirical significance and to show the details of recognition of its resource, process and effects of innovation.

In Chapter 4, services, innovation and R&D on growth and sustainable development matter finds positive relations under metric treatments. In this chapter the fair value of the intertwined relationship Service / Innovation / R&D / Growth / Sustainable Development has a tentative of demonstration. Then, tertiary sector activities development on Public service sector and Private service sector also have some dedicated lines. The location and attractiveness factors/performance for international visibility corroborates with further explanations and, finally, important bases about the Era of the Knowledge Intensive Business Services (KIBS) compose the last part of this chapter.

Chapter 5 brings the Analytical and Empirical Specific Approaches chosen about Service Economic Results ; Attesting Attractiveness of Locations by Business Service Final Decision Implementation vis-à-vis to Location Factors also give inputs of metric contributions ; R&D and Innovations on Tertiary Sector's Performance and

Its Contribution to the World Economic Growth constitutes one of the models here shared ; and finally another model taking Increasing Product Variety and Innovation in Tertiary Sector Impacts on Economic Growth close the metric analysis of the dissertation.

The final chapter draws upon the entire thesis, connecting the research questions and empirical findings in order to give an overview of the results. In addition, the limitations of the study are presented and discussion about the implication of the findings for design and implementation of economic transformation through policy are also set in this chapter. And in last lines the chapter shares possible extension for future research.

In appendix the Reference Case Cape Verde, where Policy Implications of the willing transformation find reasons on the Serving Culture (Morabeza) of the country ; the National Strategy Document special Service traits for a Sustainable Development ; the country Clusters bold vision (believed as the ideal structure to stimulate Development) ; the matter of Entrepreneurship and Development of Service Sector in Cape Verde (Urban and Rural Informal Sector controversy) ; And finally the culmination of Stepping to Become a KIBS Economy.

Results and Contributions of the Study :

In the study on genesis process of innovative service, precedents studies and approaches which are effective to process and service innovations in tertiary sector had been investigated and classified from perspectives such as : improvement of productivities or decrease in cost in process innovation, efforts in innovative service creations and a sustainability of innovative process. Based on these investigations, a new category of the notions of service innovation had been proposed in the theoretical part and attested by a case study, questionnaire and interviews in empirical parts of the thesis.

By direct interview to the 91 leading companies of innovation in Kyoto, resources, information, and efforts that lead to the service innovations had been investigated and clarified. Elements contribute to innovations in service had deduced empirically in this manner.

Among the resources of innovative new services, exists a kind of service that is conventionally supplied in the market but is served in newly adjusted according to the needs of contemporary market. It is defined and named as a retrospective service, and after that, a precise cross case study on one of the examples with much success had been executed to fix empirical significance and to show the details of recognition of its resource, process and effects of innovation.

Theoretical and empirical study is made on economic growth effects of innovative process of service creation by using an endogenous growth model of R&D and increasing product variety.

In the part of economic growth study, after introducing a tertiary sector to the R&D and product variety type endogenous growth model (Jones, 1997, Acemoglu, 2008), economic effects on increase in product variety caused by R&D had been investigated by examining a steady growth path. Based on the assumption of consumers' love for product variety, it is indicated that increased input into R&D activities which implies an increase of product variety and an increase in input into the tertiary sector which implies expansion of the sector, enhance the rate of economic growth and increase the per capita output level.

In the part of the empirical study, this thesis conducted different types of statistical works :

1. At first, by using international cross-country data, regression analysis on the per capita output equation in a steady growth equilibrium showed significant positive growth effects of labor input increase in R&D that is lead to increase in product variety and also, intermediate input increase in tertiary sector that implies tertiary sector's expansion.
2. Covariance structure analysis on main variables appeared in the growth model to show a principal compo-

ment that has positive factor loadings among per-capita GDP, a labor input share in R&D sector and a share of tertiary sector which implies positive growth effects of increasing product variety and tertiary sector expansion.

3. A regression analysis of a macro-production function in a steady growth equilibrium, by using Japanese macro data including industrial classification number that implies variety of products showed significant positive coefficients of capital stock and product variety.
4. Moreover, a regression analysis of macro-production function by using international cross-country data, showed significant positive coefficient of an investment share of GDP and a labor input share into R&D activity that implies positive growth effects of increase in product variety and capital stock.

Novelties of the Study

The most unique point of the thesis is the proposal of innovation and creation of new products in tertiary sector as an alternative of conventional growth policy to countries and economies characterized by its limited availability of resources of economic growth. Furthermore, this is the most remarkable contribution of the thesis at the same time.

In this thesis, by identifying and classifying the preceding studies and its results, this study had succeeded in showing the resources available to service innovation and new service creation. Managerial theoretical investigations of this thesis showed productivity improvement effects of those resources stated above, generative effects and a sustainability of the growth effects of service innovation. According to the author's knowledge, this is the first study presented these results and policy proposals.

Interviews and questioner to the Japanese leading service companies conducted in the study had succeeded in indicating and clarifying the resources and efforts of their service innovation. Especially, the cross case study on the leading company of retrospective service innovation showed a quite available example of innovation in accordance with the contemporary needs of the market. These results provide effective policy implications to the economy characterized with limited availability of resources for economic growth.

In the theoretical study of increasing product variety and economic growth, this study constructed a three sector endogenous model with R&D and increasing product variety by introducing a tertiary sector and indicated growth effects of increase of new products and, especially, expansion of tertiary sector caused by the introduction of the new products.

The empirical works on growth effects of R&D and increasing product variety had succeeded in fixing the positive growth effects of new products introduction to the market and, moreover, positive growth effects of tertiary sector expansion. Although precedent study focused on the growth effects of new products introduction caused by import, this study conducted a direct regression analysis on macro-production function by utilizing industrial classification index.

These results of theoretical and empirical analysis on macro growth effects reinforce the analytical results and policy implications of the study on growth effects of service innovation and product increase in tertiary sector.

As purpose it seems wise to continuously work reflections on what remains to be done to enhance the responses already brought to this concern. This subject to study on Doctoral degree is not only the importance of economic transformation phenomenon for economies as the Cape Verdean on in a global contribution, but also, in net contribution, for the : a) yet to be achieved theoretical and empirical consensus concerning the effect of service/innovation on growth process for resource limited economies ; and b) the lack of studies for Cape

Verde about the relationship between what kind of service/innovation effort leading its growth and transformation.

The concern of finding suitable alternatives from the genesis process on the third sector, relying on location factors of knowledge driven firms on an economic limited resources context, allows an attempt to measure economic transformation based on sustainable inputs that will provide additional evidences to establish a kind of barometer of attractiveness economic signs. And comfort to strategic policy favoring service ad hoc specialization based on knowledge for sustainable development is the originality enlighten contribution of this Doctoral Thesis.