Macao Gaming Human Resources Issues and Solutions

Zheng Gu and Ricardo C. S. Siu

Macao Association of Economic Sciences

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Executive Summary

To a large extent, human resources are a major contributor to the smooth operation and competitiveness, hence sustainable growth, of a casino industry. This is also a crucial issue associated with the recent liberalization and restructuring of Macao's casino industry. In 2002, the Macao Special Administrative Region (SAR) Government replaced Macao's casino monopoly by approving three new licenses, of which two of the new licenses were granted to firms with extensive business experiences in Las Vegas. In doing so, it was expected that Macao's traditional casino business would be restructured towards the Las Vegas style, with emphasis on service quality and a variety of business elements, especially the integration of non-gaming leisure and business services.

From the direct evidence (which are publicly accessible) examined in this study, it has been identified that both quantity and quality of the existing labor force in Macao may not be sufficient to meet the demand resulting from the rapid development of new casinos and desire for related diversification. In addition, to identify Macao's gaming labor force quantity deficiency in the operational level, labor needs were forecasted for two stages, short term, 2008 to 2012, and long range, 2013 to 2017 respectively. Based on Macao's gross gaming revenues projected by Mellen and Okada (2006) and the Macao casino labor productivity as of 2007, which is assumed to be constant throughout the two stages of forecast, casino labor needs under different casino revenue diversification scenarios for 2008 through 2012 were forecasted. On the other hand, based on tourist numbers projected from 2013 through 2017 using a trend regression model and the ratio of tourists to casino employees as of 2007, the long-range, 2013 to 2017 needs were estimated for the casino labor force.

The findings show that Macao does not possess the required quantity of workforce to reproduce the Las Vegas model completely, especially the highly diversified non-gaming elements in the casino sector. For example, let us assume that the gaming labor productivity in 2007 is a constant from 2008 to 2012, and that Macao's casino industry is aiming to follow the Las Vegas experiences. Then if 25% of its total casino revenues will be diversified into high value-added non-gaming services, the size of work force employed by the casino resorts by the end of 2012 would need to be more than three times the number employed in 2007. For this reason, both the government and the industry have to research carefully and decide strategically for an optimal range for diversification of Macao's casino resort business. They must identify which could best fit into the real situation of

Macao in various stages in the near future, as well as to plan for related labor policies, including use of both local labor and import labor, on a long-range consideration.

Moreover, to conduct an insightful investigation into the quality deficiency of Macao's gaming human resources, two tailor-made surveys, one for customers and one for employees, were prepared with reference to Las Vegas casino service quality so that corresponding data could be collected for the purpose of empirical studies. In principle, the employee survey self-assessed the work performance by casino employees and identified the relationship between workforce performance and job satisfaction. The employee survey also attempted to determine the drivers of job satisfaction, thus providing clues for improving employee efficiency and morale in the Macao casino industry. In the customer survey, a similar set of criteria, including language and job skill proficiency, greeting and smiling at guests, a willingness to assist guests, etc., that are applied to evaluate the gaming employees' service quality was adopted. Accordingly, the service quality, as evaluated from gaming employees' self-assessment, could be compared with the service experienced by customers. From this survey, key factors determining casinos' service quality were also identified from the customers' point of view, which could provide valuable references for improving service quality in Macao's casinos.

The findings derived from these two surveys show that three service quality attributes: i) smiling to customers, ii) greeting guests and iii) being helpful are below average and needed improvement. Empirical evidences show that these three service features are more important issues than raising communication and technical skills for the Macao casino industry employees. Besides, the four companies, SJM, Galaxy, Sands, and Wynn, included in this study as of the first quarter of 2007 exhibit different levels of deficiency in these service quality attributes. Last but not least, evidences derived from these surveys also align with the general argument in service business that service quality, as experienced and reported by customers, is positively correlated with the level of satisfaction of employees towards their company. In principle, casinos that obtain the highest scores in service quality from the customer survey simultaneously gain the highest scores of employee satisfaction from the employee survey, *vice versa*. In Macao, it is identified that "salary and benefits" is the most important driver for employees' job satisfaction, followed by "training" and "support" which could be obtained from their companies.

While gaming human resources deficiency, in both quantity and quality, is an undeniable fact associated with the rapid expansion and anticipated diversification of Macao's casino industry, significant unfavorable impacts have been passed to the other parts of the domestic labor markets. Accordingly, this hinders the progress and redevelopment of various traditional economic sectors, and the sustainable growth of the Macao economy. For example, domestic labor costs are rising considerably through the competitive force for a limited amount of qualified labor. In addition,

human resources deficiency has become a more serious issue confronting the various local sectors, especially the traditional small and medium enterprises. In practice, although imported labor is, and has been adopted as an inevitable measure to lessen the related pressure, remarkable social conflicts are diffused among the low-income and low-educated local working groups.

In view of the empirical facts being identified from this study, several crucial issues must be reconsidered carefully and planned strategically for the coming decade. First, it is an essential task for the Macao SAR Government and the casino industry to arrive at a more concrete decision on the level of casino business diversification in various stages (i.e., the desired scale of non-gaming business to be developed within the casino industry in the coming years). Based on this objective, a proactive labor policy system must be constructed accordingly. The use of imported labor seems inevitable in the coming years if business efficiency and industrial competitiveness are to be insured, however public policies and supports in related educational programs serve as the most effective measures to elevate the quality and competitiveness of local labor force. This especially applies to the younger generations, so that social conflicts derived from imported labor could be lessened over the long run.

(Two peer-reviewed journal papers, which represent part of the results derived from this study, have been completed by the authors. The titles of these two papers and their status as of October 2008 are: i) The Macao casino industry labor force quality: An investigation from the customer service perspective. Forthcoming in the *UNLV Gaming Research and Review Journal* and ii) Drivers of job satisfaction as related to work performance in Macao casino: An investigation based on employee survey. Forthcoming in the *International Journal of Contemporary Hospitality Management*.)

內文摘要

在很大程度上，人力資源是賭場業運作暢順、保持競爭力，並持續增長的一大支柱。近年澳門賭權開放，博彩業經歷重組，人力資源亦成爲其中一項重要的議題。2002 年，澳門特區政府打破澳門賭場的壟斷局面，批出三個新牌照，其中兩個批給了來自拉斯維加斯的著名賭場經營集團，以期望把澳門的傳統賭場業轉型爲着重服務水平和各種商業元素，尤其是結合非博彩服務及商務服務的拉斯維加斯式綜合娛樂事業。

本論文經分析所掌握的直接數據（供公眾查閱的資料）後，發現澳門目前的勞動人口無論在數量上及素質上，均不足以應付一眾新賭場的急速發展，以及賭場意圖拓展的多元化業務。爲找出澳門博彩業在運作層面上勞動人口數量的不足之數，本論文分短期（2008 至 2012 年）及長期（2013 至 2017 年）兩個階段預測勞動人口的需求。一方面，以 Mellen 和 Okada（2006）推測的澳門博彩總收入及 2007 年的澳門賭場勞動生產力爲基礎，推算出賭場由 2008 至 2012 年在不同收入分佈情況下的人力需求；另一方面，以利用趨勢迴歸模式作出對 2013 至 2017 年的遊客人數預測及 2007 年賭場員工與遊客的人數比例，推算出 2013 至 2017 年賭場的人力需求。而這兩個階段的預測均以 2007 年的澳門賭場勞動生產力爲常數。

研究結果顯示，澳門並不具備成爲另一個翻版拉斯維加斯所需的勞動力，更遑論賭場業高度多元化的非博彩業務。舉例來說，假設把博彩業在 2007 年的勞動生產力作爲 2008 至 2012 年的常數，而澳門的賭場業以成爲另一個拉斯維加斯爲目標，則假如賭場把其總收入的 25% 撥作發展高增長值的非博彩業務，賭場度假村在 2012 年年底前便需比 2007 年僱用多三倍人手。有鑑於此，政府與業界必須詳細研究，作出深思熟慮的策劃，定出對澳門賭場度假村業務最有利的多元化幅度。他們不但必須按照未來數年澳門在不同階段的實際情況，定出不同的幅度，而且還應從高瞻遠矚的角度，擬定包括本地勞工及外來勞工的相應勞工政策。

此外，爲了深入研究澳門博彩業人力資源素質上的不足之處，我們分別

爲顧客及員工設計了兩份問卷調查。這兩份問卷以拉斯維加斯的賭場服務素質爲參照標準，以便把所蒐集的數據作實證研究之用。原則上，員工問卷調查是要求員工自我評核工作表現，並進一步找出工作表現與工作滿足感之間的關係。該調查亦嘗試找出工作滿足感的源頭，從而爲改善澳門賭場業的員工效率和士氣提供一些頭緒。而顧客問卷調查在評核博彩業員工服務素質時，採用的是與員工問卷調查相若的一些準則，例如語言和工作技能、主動招呼客人、微笑待客、主動幫助客人等。這樣，博彩業員工自我評核的服務水平便可與顧客的親身感受作一比較。此外，這次調查亦有助了解顧客心目中決定賭場服務素質優劣的關鍵因素，爲提高澳門賭場的服務水平提供寶貴的參考。

這兩次調查的結果顯示，i)微笑待客；ii)主動招呼客人；以及iii)主動幫助客人這三項服務素質指標的得分低於平均水平，有待改善。實證證據顯示，改善這三項服務指標比加強澳門賭場員工的溝通及技術性技巧等來得更加重要和迫切。此外，本調查的對象包括澳博、銀河、金沙和永利，直至2007年首季，這四家公司在這些服務範疇都出現不同程度的不足。最後，這些調查所得的證據亦再一次印證了服務界的一條金科玉律：顧客所體驗和反映的服務素質與員工對公司的滿意度是相輔相成的。原則上，在顧客調查的服務素質方面取得最高分的賭場，同時也在員工調查的員工滿意度中取得最高分。在澳門，“薪酬及福利”是員工對工作滿意與否的最關鍵因素，其次則是公司提供的“培訓”及“支持”。

博彩業的人力資源在數量及素質兩方面的不足，無疑是澳門賭場急速膨脹和預期中多元化發展所衍生的問題。更嚴重的是，這個問題亦波及澳門本土勞工市場，對其他行業造成重大的不良影響。各種傳統經濟行業的發展和重組受到阻礙，以致拖累了整個澳門經濟的持續發展，例如本地的勞工成本因爲合資格技術勞工求過於供而大幅增加。此外，人力資源不足亦成爲各本地行業共同面對的難題，其中以傳統的中小企業所受的衝擊最大。事實上，雖然輸入外勞是勢在必然的解決辦法，而且當局也一直在這樣做，但卻受到低收入、低學歷本地勞工團體的強烈反對，形成社會衝突。

鑑於本研究所得的實質事實，有幾個重要議題是當局必須重新加以審視，爲未來十年作出長遠策劃的。首先，澳門特區政府及賭場業必須就賭場

業務在不同階段的多元化幅度作出一個比較明確的決定（即未來數年賭場業非博彩業務的理想發展規模），並因應這個目標，擬定具前瞻性的勞工政策制度。要保持效率及業界的競爭力，在未來數年繼續輸入外地勞工似乎是在所難免的。但當局亦須着力提高本地勞工的素質和競爭力，而這方面最有效的莫過於推行有關的公共政策，並對有關的教育課程提供支援。此舉對年輕一代尤爲重要，長遠尤其可紓緩輸入外勞所引致的社會衝突。

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Moreover, assistance by students in the Gaming Management program at the University of Macau in conducting the surveys was highly appreciated. Their time and efforts in ensuring the accuracy of data collected provided important raw data regarding the human resource issues associated with the recent growth and development of Macao's casino industry.

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1

Introduction

1. Purpose of this study

Macao's casino industry carries many unique features, which distinguish its performance from other casino jurisdictions in the world. Even though Macao was previously crowned as the Oriental Monte Carlo and as the Asia Las Vegas since the dawn of this new millennium, the market structure, business operation model, and customer sources etc., of Macao's casino industry were substantially different from these other jurisdictions. One of the features is the remarkable contribution of table games to the industry's gross revenue. In 2002 when the Macao Special Administrative Region (SAR) Government replaced the monopoly structure of this industry by an oligopoly with three new licenses, table games contributed 99% of Macao's gross casino revenue (GCR)[1], whereas the same in Las Vegas was only around 35%[2]. Although the gross revenue of gaming machines (slots and electronic tables) recorded significant growth thereafter, table games still accounted for 95.7% of Macao's GCR in 2007[3]. In view of the particular historical, social and institutional settings for Macao's casino business, it is reasonable to infer that table game will continue to assume the dominant role in Macao's casino business, which notably differentiates Macao from Las Vegas, Monte Carlo[4] and other major casino jurisdictions in the world.

Services for table games are directly provided to customers by manpower, through dealers and various supporting personnel like floor supervisors, pit managers,

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[1] Gaming Inspection and Coordination Bureau of the Macao SAR Government (DICJ). "Gaming Statistics 2002-2007": the gross revenue from Games of Fortune was MOP22,180 million in 2002, out of which the Slot revenue only took MOP231 million. http://www.dicj.gov.mo/EN/Estat/DadosEstat/2007/estat.htm#n1.

[2] Annual Nevada Gaming Abstract 2002: http://gaming.nv.gov/documents/pdf/2002_abstract.pdf.

[3] Gaming Inspection and Coordination Bureau of the Macao SAR Government (DICJ). "Gaming Statistics 2002-2007" : the gross revenue from Games of Fortune was MOP83,022 million in 2007, out of which the Slot revenue only took MOP3,594 million. http://www.dicj.gov.mo/EN/Estat/DadosEstat/2007/estat.htm#n1.

[4] Although VIP operation shares a significant portion of the gross gaming revenue in Monte Carlo's casino industry, its operations in practice is quite different from the traditional gambling-room operations in Macao.

and floor service personnel, etc.[5]. Therefore, quantity and quality of human resources employed by the casino industry become the two key factors determining customer loyalty and their desire to revisit, and their comments about the service quality of Macao's casinos in turn drive the industry's competitiveness and sustainable growth. However, the rapid expansion of Macao's casino industry since the termination of its monopoly structure gives rise to many critical human resource issues/challenges in the local economy. As labor supply and demand in the various local economic sectors are highly interlocked, human resource issues affecting the casino industry would undoubtedly form a strong force affecting the growth, development and re-development of other local economic sectors, especially small and medium enterprises (SMEs), hence blocking the diversification of the Macao economy.

Casino gaming is highly important to the Macao economy. GCR accounted for 33.4% of the economy's production-based GDP in 2006[6] and if direct and indirect income derived from the casino industry were taken into consideration, no one would repudiate the claim that casino gaming contributes more than 60% of Macao's economic output[7]. Therefore a meticulous examination of the quantity and quality issues associated with the current practice and projected growth of the casino industry is definitely a crucial and urgent task to not only for the industry, but also the economy as a whole, which is the purpose of this study.

Five major research questions are posed:

1. What is the current situation of Macao's labor market and why the situation is as is today?
2. What are the human resources quantity issues triggered by the rapid expansion and anticipated growth of the casino industry?
3. What are the quality issues with the existing labor force by taking into consideration competitiveness and sustainable growth of the casino industry?
4. Given the situation identified in question 1, and because unfavorable results are empirically found for questions 2 and/or 3, what are the feasible measures to cope with Macao's gaming human resources deficiency?
5. What are the likely labor dynamics to be extended from the casino industry to the other sectors of the local economy, and what are the possible measures to assist their transition and re-development?

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[5] As compared to casino markets where slot machines are the major forms of gaming devices, operation of table games is more labor intensive.

[6] Statistics and Census Services of the Macao SAR Government (DSEC). "Gross Domestic Product by Production Approach 2006." E-Publications: National, p. 1: "The percentage share of the gaming industry registered a decrease of 1.6 percentage points, from 34.9% in 2005 to 33.4% in 2006." http://www.dsec.gov.mo/english/pub/pdf/e_pibp_fr_2006_y.pdf.

[7] Statistics and Census Services of the Macao SAR Government (DSEC). "Gross Domestic Product by Expenditure Approach 2006." E-Publications: National, p. 46: Table 5 (Exports and imports of goods and services) shows that out of the MOP84.34 billion exports from the external trade of services, gaming takes MOP56.18 billion, sharing 66.6%. http://www.dsec.gov.mo/english/pub/pdf/e_pib_pub_2006_y.pdf.

2. Potential contributions

Although the geographical area of Macao, which includes the Macao Peninsula, the two islands of Taipa and Coloane, and Cotai which is a section of reclaimed land between Taipa and Coloane, and its absolute economic volume in terms of gross domestic product are both very slim, economic issues are by no mean simple or proportional to its absolute size. Indeed, owing to its unique historical, social and institutional settings, many of the existing economic issues, such as labor issues as examined in this study, are complicated topics that may not be easily understood and resolved by the public and local decision makers, not to mention outsiders (e.g., economists and businesspersons from the outside).

Through addressing the first research question, a better insight into the dilemma associated with Macao's existing human resources, especially the gaming human resources deficiency, will be gained. This forms an essential ground to facilitate decision makers and the Macao community to better understand and cope with the related challenges faced by the local economy and the casino industry. Although there have been various studies on Macao's labor issues released in the recent years, none of them look at the issues from the angle of evolutionary economics.[8] By applying this economic reasoning, starting with the question of how Macao evolved to what it is today, and disclosing the interdependence between various economic parties in the labor market, a sound theoretical and realistic framework would then be mapped out which provides our understanding about Macao's gaming human resource issues.

On top of revealing the phenomena surrounding Macao's existing human resources deficiency, two related factors are also investigated. First, quantity deficiency in the coming five to ten years will be identified based on planned capacity growth and model estimated optimal capacity respectively. Second, based on surveys and interviews with casino patrons, casino employees, and hospitality managers and using Las Vegas gaming industry-staffing standards as benchmarks, quality deficiency will be determined. Suggestions in respect of how to resolve gaming personnel shortage and raise gaming staff quality will be proposed based on the findings. Consequently, this research should be beneficial to the Macao economic society by suggesting both short-term and long-term solutions to cope with the gaming human resources deficiency issues, hence reinforcing Macao as an

[8] "Evolutionary economics is a relatively new economic methodology modeled on biology. It stresses complex interdependencies, competition, growth, and resource constraints." (Wikipedia) "Evolutionary economics derives from a more modern tradition of inquiry, which does not take the characteristics of either the objects of choice or of the decision-maker as fixed. It challenges the Newtonian worldview in economics in the similar manner, as it was challenged by Darwinian evolutionary theory in biology and studies of self-organization in physics." (Wikipedia) More references in relation to evolutionary economics can be retrieved from http://en.wikipedia.org/wiki/Evolutionary_economics, and Hamilton (2004).

excellent competitive casino jurisdiction and attractive tourism destination.

Given that casino operation is the dominant industry, but not the only industry making up the Macao economy, its gaming human resources deficiency evidently exerts a lot of pressure on other local economic sectors. Moreover, the reaction from these sectors (mainly in terms of competing on the limited supply of qualified labor) further complicates issues associated with the gaming human resources. Based on the findings derived from this study, further consideration should be given to construct a proactive labor policy system, which is necessary to sustain the healthy growth of the Macao economy, as well as for the re-development of many traditional local sectors.

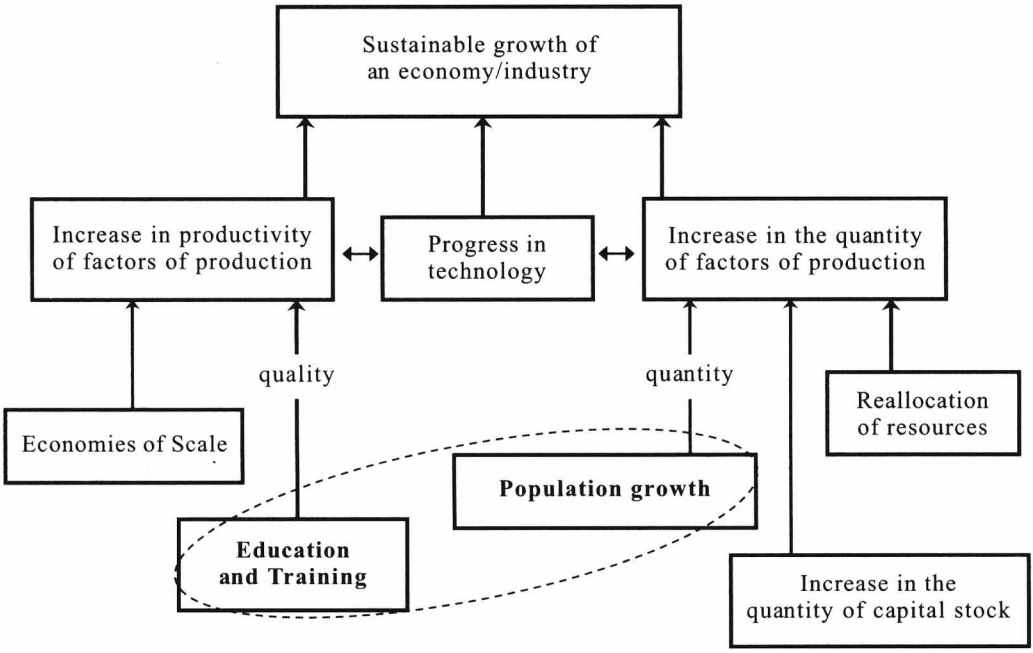
Finally yet most importantly, Macao having surpassed the Las Vegas Strip in terms of GCR since 2006, and is now the world's largest casino jurisdiction. It is hoped that this study serves as an essential piece of reference for existing and potential investors in Macao's casino and non-casino businesses, as well as related policy makers in other Asian gaming jurisdictions.

3. Guiding principles and some international experiences

To any one economy or industry, sustainable growth relies on an optimal combination and growth of the quantity and quality of its factors of production over time (see Figure 1-1). In economics, factors of production include land (natural resources of various forms), labor (human resources), capital (investor created means of production) and entrepreneurship (an organizing and risk-taking factor in the process of production). With a larger stock of human resources, the production capacity of the economy/industry is enlarged. Besides, higher quality of human resources allows a larger amount of output at a given level of employment (i.e., increase in labor productivity/efficiency). As depicted in Figure 1-1, while a rise in the quantity of human resources is largely determined by the growth in population size, improvement in the quality of human resources requires individual and/or society's investment in forms of education and training.

In principle, the role of human resources in the studies of sustainable growth as presented in Figure 1-1 is in line with the studies of casino gaming and topics relating to its competitiveness. For instance, in the development of a modern casino industry like Las Vegas, "proper staffing levels within the casino contribute directly to the adequacy of customer service and the profitability of the casino operation." (Kilby, Fox & Lucas, 2005, p. 53) While "overstaffing may result in the casino's incurring labor costs that are unnecessary to meet actual customer demand, understaffing may result in loss of revenue due to customers leaving the casino because of inadequate service or unavailability of gaming positions at their desired game." (*ibid*) In addition, it is verified in various studies that the competitiveness of a casino as measured by its "service quality-customer loyalty" is, "related to the

Figure 1-1 The role of human capital in the sustainable growth of an economy/ industry



functional quality, not technical quality." (Chen, Jang and Hu, 2005, p. 465) Indeed, functional quality is mostly, if not absolutely, determined by service quality provided directly by casino employees to the patrons during their stay in the casino. Empirically, this functional quality is valued much higher by the "high-core loyal customers" than its "potential switchers" to a casino. In other words, to account for the competitiveness and sustainability of a casino industry, which represents a collection of the performance of individual casinos in a jurisdiction, quality attributes of human resources are more important factors than capital resources attributes (technical quality) such as location, variety of games, and ancillary facilities.

Entering into the 21st century, two remarkable trends are observed from the evolution of the global casino gaming industry. First, technical quality has been, and will continuously be emphasized by casinos and casino jurisdictions in terms of significant amount of capital investment in the fixtures of casino properties. A number of new properties have been developed in Las Vegas such as Wynn Las Vegas, including the Encore; the Venetian Las Vegas, including its Palazzo; and the MGM Mirage City Center, which is scheduled to open in 2009. In Singapore there are two new casinos, the Sands in Marina Bay and the Resorts World in Sentosa, which will open in 2010. At the same time many other projects and discussions are underway in North America, South Africa and other countries in East Asia, all of which demonstrate the serious efforts put forth by the casino industry to sustain their future growth through development of technical quality.

Second, functional quality is another important area to be invested in heavily by a casino, or a casino jurisdiction, in order to differentiate their name brand from their rivals in this highly competitive global market. Indeed, in the promotion of customer loyalty programs, extensive efforts have been deployed by both the industry and the public sector to devise effective plans that include development of gaming human resources.

In recent years, the technical quality of Macao's casino industry has increased remarkably. Nevertheless, functional quality still lags behind the rapid expansion of the industries physical scale. Accordingly, comprehensive and scientific studies must be conducted, and proactive strategies must be constructed for Macao's gaming human resources to secure sustainable growth.

2

Macao's Casino Industry Human Resources Deficiency: The Current Situation and Concerns

1. Primary considerations

The economic principle of demand and supply is an axiom to any one economic society. Nevertheless, its practice is largely determined by many institutional (e.g., public policies) rather than pure economic variables (e.g., market prices and costs of production) as articulated in most of the orthodox economic literature. In the evolutionary context, a particular economic phenomenon taking effect at any given time is the consequence of interaction among a complex set of economic and non-economic forces. Over time, the consequence will evolve rather than staying in an equilibrium state, or simply adjusting from one discrete state to another. In both the commodity and factor markets, "competition, property, the price structure, and wage system, and like institutions refuse to retain a definite content. Not only are things happening to them, but changes are going on within them." (Hamilton, 1919, p. 315) In addition, "the situation of today shapes the institutions of tomorrow through a selective, coercive process, by acting upon men's habitual view of things, and so altering or fortifying a point of view or a mental attitude handed down from the past." (Veblen, 1959, pp. 132-133)

To correctly grasp the current situation and issues in relation to Macao's labor market, and to pragmatically anticipate its *changes* in the foreseeable future, it is necessary to comprehend the *habitual* forces which have been developed at various stages in the past, as well as the dynamics which continue to influence the evolution of the Macao economy. In this chapter, unique features associated with the quantitative and qualitative compositions of Macao's human resources will be identified and examined. In addition, particular human resource issues, which co-exist with the rapid expansion of the casino industry in the past few years, will be explored. Based on the facts and insights as uncovered, key human resource

problems faced by the casino industry and their interrelationship with the labor issues found in other local sectors will be highlighted. Indeed, materials covered in this part will not only promote our understanding about the existing human resource issues in Macao, but also lay down a sound foundation for formulating pragmatic studies as provision of effective references for related public and business decisions.

2. Quantitative composition of Macao's population and human resources

According to periodic surveys and reports released by the Statistics and Census Service (DSEC) of the Macao SAR Government, the estimated size of Macao's "resident population" was 538,100 at the end of 2007.[1] To accurately derive the changing size of Macao's reported population and thereby assess its labor force issues, it is worthwhile to first point out that resident population is a common unit adopted internationally to measure the population size of a country or region. However, the reported number may not be directly applicable to comprehensive studies with particular objectives, such as the study of gaming human resources issues as presented in this paper. A major reason is that in Macao, imported labor constitutes a large proportion of the total resident population. Before analyzing the consequences (presented in Chapter 7) of imported labor to the direct applications of the reported population size and related labor statistics, this chapter would illustrate and examine the unique composition and features of the reported numbers in Macao, so that they could be applied appropriately to this study.

As stated in the "Explanatory Notes" of the *Employment Survey*, labor force represents the total number of "individuals aged 14 or over that, during the reference period, are available to participate in the production of goods and/or services comprising the employed population and unemployed population." By this definition, over 85%, or over 460,000, of the people living in Macao are "aged 14 or over that" (see Table 2-1). In principle, several economic factors are taken into consideration when this group of population is classified as "available to participate" in economic production and categorized into total labor force.

Table 2-1 Age composition of Macao's population (at the end of 2007)

Age Group	Number	Proportion in Total Population %
0 – 14	72,600	13.5
15 – 19	44,900	8.3
20 – 29	94,300	17.5

[1] The first time Macao's population exceeded 500,000 was in 2006.

(cont.)

30 – 39	91,800	17.0
40 – 49	103,500	19.3
50 – 59	75,200	14.0
60 – 64	17,800	3.3
≥ 65	38,000	7.1
Total: 538,100		

Source: "Estimates of Macao Resident Population," Table 1.2 (DSEC): http://www.dsec.gov.mo/index.asp?src=/english/html/e_demgraphic.html (Retrieved on July 2, 2008).

First, as a common phenomenon in most of the world's modern economies, and especially in service and knowledge based economies, a significant portion of people in the age groups below 18 and above 60 may not be actively taking part in the labor force. In any modern economy where talent and tertiary knowledge, instead of physical labor, constitute the major requirement for the production of goods and services, primary and secondary education becomes a necessary condition to provide youth with the required abilities rather than simply the willingness, to enroll into the labor force. Although school-aged individuals between the ages of 15 to 18 could work, most, if not all of them, are neither employed nor declare themselves as unemployed and are therefore not counted in the labor force. On the other hand, in the rapidly changing global and regional economies, in many countries workers will retire or become inactive from the labor force at the age of 60, even though 65 is usually taken as the official retirement age. With the above factors taken into consideration, the upper limit of supply to Macao's labor force is around 340,000, or 66% of its population.

In addition, it is commonly understood that in any one society, homemakers, be they husbands or wives, who voluntarily withdraw from the labor market to take care of their families are not counted in the official labor force statistics. This is the major factor, which explains the difference between the aforementioned labor force of 340,000 and the reported labor force statistics of 309,800 workers in 2007.

Moreover, it is worthwhile to highlight the unique feature of imported labor that is co-mingled with Macao's population and therefore part of its labor force. Indeed, a large proportion of the population reported as "living or residing" in Macao are non-permanent residents, as distinct from permanent residents. According to Macao's regulation, although imported labor is legally permitted to live in Macao during the contracted periods, they are not residents of Macao and no Macao resident identification card is issued to them. However, in the official statistics of Macao's total population and employed population, the imported labor is counted and included. Although this is a common international approach when conducting periodic population surveys, it is necessary to highlight the fact that imported labor significantly expands the reported population size in Macao due to small total number of local permanent residents (see Table 2-2).

Table 2-2 Macao's population, labor force and imported labor totals (1995 – 2006)

End of Year	Total Population[a] (1)	Total Labor Force[b] (2)	Imported Labor[c] (3)	(3)/(1) %	(3)/(2) %
1995	409,300	187,100	35,286	8.62	18.9
1996	415,101	202,400	29,900	7.20	14.8
1997	417,295	202,300	29,723	7.12	14.7
1998	422,304	206,000	32,013	7.58	15.5
1999	427,411	209,400	32,183	7.53	15.4
2000	430,569	209,500	27,221	6.32	13.0
2001	434,096	219,000	25,925	5.97	11.8
2002	439,162	218,600	23,460	5.34	10.7
2003	445,066	218,500	24,970	5.61	11.4
2004	465,333	230,300	27,736	5.96	12.0
2005	484,277	247,700	39,411	8.14	15.9
2006	513,427	275,500	64,673	12.60	23.5
2007	538,100	309,800	85,207	15.80	27.5

Notes: *a* 1995 to 2003 data are derived from "A Graphic Review of Macau Transformation" (DSEC), p. 93, http://www.dsec.gov.mo/index. asp?src=english/html/e_general.html (Retrieved on July 2, 2008). 2004 to 2006 data are derived from "Estimates of Macau Resident Population" (DSEC), Issue December 2004, 2005 and 2006 respectively.

b II-2 Labor Force, Employed Population and Unemployed Population by Sex (DSEC), http://www.dsec.gov.mo/index.asp?src=/english/indicator/ e_ie_indicator.html (Retrieved on July 2, 2008).

c "Employment Survey (Quarterly)" – Supplementary Information: Non-Resident Worker by Industry, various issues (DSEC).

As depicted in Table 2-2, imported labor had long constituted a large proportion of the Macao population (around 15% in the second half of the 1990's). The Macao SAR Government took measures in 1999 to secure better employment opportunities for local residents by reducing the amount of imported labor and they were able to reduce the ratio to around 10% between 2001 and 2003. However, rapid changes in the domestic economy following the Government's decision to restructure its casino industry led to heavy demand for imported labor in varied domestic sectors and since 2005, the ratio has increased. By the end of 2007, 15.8% of Macao's population was made up of imported labor, representing 27.5% of its total labor force. These two percentages were relatively high as compared with other economies in the world. For example, at the end of 2007, "foreign domestic helpers"[2] living in Hong Kong accounted for around 3% and 6% of its total population and labor force respectively, while imported labor accounted for less than 1% of the 300 million people in the United States. Indeed, understanding the social and economic settings behind this high proportion of imported labor in the

[2] In Hong Kong, the term "foreign domestic helpers" is equivalent to imported labor.

Macao economy is essential for anyone who is to enter into the contemporary debates over Macao's labor issues (more discussion will be presented in the last section of this chapter and in Chapter 7). For example, the remarkable proportion of imported labor may lead to different conclusion when using unemployed work force, or unemployment rate figures for discussion of Macao's current unemployment issues and in related public policy debates.

3. Quality issues associated with Macao's human resources

Apart from the quantitative features, qualitative aspects of Macao's human resources are also unique in the world's economies. On average, a large proportion of Macao's citizens are under-educated. As shown in Table 2-3, in the dawn of the new millennium, less than 30% (26.4% in 1998) of its employed population had completed a secondary school, or higher level, education (i.e., attained "senior secondary" education in accordance with Macao's statistics). This situation has improved significantly over the past few years with the percentage increasing from 26.4% in 1998 to 45.5% in 2006, however in 2007, 54.5% of the employed population still had not completed a secondary school education.

Table 2-3 Educational attainments of the employed population (1998 – 2007) (%)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
No schooling / Pre-primary	11.1	10.9	10.4	10.5	10.0	10.2	9.9	8.0	5.8	5.7
Primary (Grade 1-6)	27.0	26.4	27.2	27.8	26.2	24.9	23.9	22.6	21.9	18.9
Junior secondary (Grade 7-9)	35.5	35.3	33.1	32.4	32.6	31.8	30.9	31.6	30.1	30.0
Senior secondary (Grade 10-12)	16.4	16.0	16.7	17.0	17.7	17.6	19.9	22.2	24.4	25.3
Non-degree higher Education (Diploma)	2.5	2.8	3.1	2.5	3.1	2.9	3.0	2.8	3.4	3.3
University degree	7.5	8.6	9.5	9.8	10.4	12.6	12.4	12.8	14.3	16.9

Source: "Employment Survey (Quarterly)" – Table 7, various issues (DSEC).

When compared with Hong Kong and Singapore where only around 30%[3] of their employed population had a "less than secondary" education level, it becomes very evident that the general education level of Macao's employed population needs

[3] "Changing education profile", http://www.asianz.org.nz/files/megatrends_education.pdf (retrieved on July 12, 2007).

to be elevated. In addition, the percentages of employed population who had received post secondary education in Hong Kong and Singapore were over 20% and 40% respectively[4] (Appendix A-1 shows the education profile of some Asian countries).

The low education level of Macao's labor force was also reflected in its unemployed population. As indicated in Table 2-4, nearly 80% of its unemployed had less than a senior secondary education in 1998, and it was only down slightly to 72.6% in 2007. This percentage was also much higher than that of Hong Kong, which was only 46.1% in 2006[5].

Table 2-4 Educational attainments of the unemployed population (1998 – 2007) (%)

Year	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
No schooling / Pre-primary	15.0	16.6	17.0	15.2	14.2	14.1	14.0	12.0	11.0	11.5
Primary (Grade 1-6)	36.1	38.3	36.8	34.7	34.8	37.9	36.3	32.1	27.5	30.3
Junior secondary (Grade 7-9)	28.4	27.9	28.6	29.4	31.2	27.0	28.6	30.8	27.9	30.7
Senior secondary (Grade 10-12)	15.0	10.7	11.4	14.1	14.9	13.7	14.0	16.0	20.8	19.6
Non-degree higher Education (Diploma)	1.7	0.8	0.8	0.7	0.6	1.2	1.1	1.2	2.0	0.6
University degree	3.8	5.7	5.4	5.9	4.3	6.1	6.0	7.9	10.9	7.2

Source: "Employment Survey (Quarterly)" – Table 15, various issues (DSEC).

By comparing Tables 2-3 and 2-4, two interesting phenomena were identified. First, as the proportion of employed population with university degree increased during the past decade from 7.5% in 1998 to 16.9% in 2007, the same applied to the unemployed population with university degree, increasing from 3.8% in 1998 to 7.2% in 2007. Second, the percentage of unemployed population possessing senior secondary education increased significantly over the years, from around 15% between 1998 and 2005 to 20.8% in 2006 and 19.6% in 2007. Yet, given this phenomenon, various gaming and non-gaming sectors still reported shortage of labor in recent years, which may imply that the standards provided by the secondary and higher education system were inadequate to meet the knowledge level required by the changing structure and development in the Macao economy.

[4] *Ibid.*

[5] "Household Survey (Quarterly)," January-March, 2007.

4. Features of the human resources deficiency in Macao's casino industry

Since the opening of the first Las Vegas-style casino, the Sands Casino, in May 2004, and the rapid expansion in the scale of the casino sector following the Macao SAR Government's approval of three sub-concessionaries as an extension of the original three casino concessionaries, the demand for gaming human resources increased considerably, even beyond the market's original expectation. During the same period, the size of direct employment rose from more than 9,000 in 2002[6] to over 45,000[7] at the end of 2007, an increase of almost five times. Nevertheless, thousands of job positions were classified by casinos as unfilled. With the total number of vacancies less than the total number of unemployed most of the time (except in the second quarter of 2005), it was evident that the unemployed population failed to meet the basic requirements of the casino vacancies in terms of general education level (see Table 2-5). For example, when the total number of casino vacancies decreased by 9,635 from 13,046 in the second quarter of 2005 to 3,411 at the end of 2007, total number of local unemployed was only 600 lower.

Table 2-5 Gap between the unemployed and the casinos' demand for labor (2004 – 2007)

Labor \ Time	2004q2	2004q4	2005q2	2005q4	2006q2	2006q4	2007q2	2007q4
Total Unemployed [a]	11,100	9,800	10,100	10,300	10,300	10,100	9,200	9,500
No/Pre-primary	1,600	1,300	1,200	1,100	900	1,100	800	1,100
Primary	4,000	3,500	3,700	3,000	3,000	2,800	2,100	2,900
Junior secondary	3,400	2,700	3,300	3,300	3,600	2,800	3,100	2,900
Senior secondary	**1,400**	**1,500**	**1,300**	**1,900**	**1,900**	**2,100**	**2,400**	**1,900**
Tertiary	700	800	600	1,000	900	1,300	800	700
Casino Vacancies [b]	4,925	7,104	13,046	6,167	5,699	5,631	5,112	3,411
No preference	296	313	744	728	285	141	19	38
Primary	20	21	1,018	12	40	73	70	137
Junior secondary	980	1,911	3,601	1,215	1,841	850	2,350	2,252
Senior secondary	**3,344**	**4,355**	**6,419**	**3,534**	**2,770**	**3,953**	**2,167**	**499**
Tertiary	286	497	1,265	678	764	614	506	485

Notes: a "Quarterly" data as released in the "Employment Survey" (DSEC): http://dsec.gov.mo/index.asp?src=English/html/e_employment.html

b Measured against related ratios as released in the "Survey on Manpower Needs and Wages – Gaming Industry" (DSEC): http://dsec.gov.mo/index.asp?src= English/html/e_employment.html

[6] *Macao Daily News*, June 5, 2007, p. B07.

[7] "Survey on Manpower Needs and Wages – Gaming Industry," 4th Quarter, 2007 (DSEC): http://www.dsec.gov.mo/index.asp?src=/english/html/e_employment.html

In addition, as shown in Table 2-5, senior secondary education, which is equivalent to grade 12 in North America, or high school graduation in most of the Asian countries, is the common requirement for 50% to 70% of the casino vacancies. This is in line with the global trend in the development of the high value-added hospitality business. However, as the majority of Macao's labor force, both employed and unemployed, possesses only primary or junior secondary education level (i.e., grade six or grade nine in North America), it is obvious that the general quality of Macao's existing human resources, excluding imported labor, fails to meet the requirement triggered by the rapid changing demand in the casino industry. Indeed, similar views concerning the quality of Macao's human resources have also been publicized in many recent newsletters (e.g., *Macao Daily News*, April 25, 2007, p. E03; June 5, 2007, p. B07; etc.).

Moreover, Table 2-5 revealed some other structural issues associated with the gaming human resources deficiencies. First, when "senior secondary education" was set as the entry requirement, the casino vacancies decreased by 5,920 from 6,419 in the second quarter of 2005 to 499 at the end of 2007. However, local unemployed people filled only a few of the positions in this group (the total unemployed population in the education group even increased by 600 from 1,300 to 1,900). Second, although over 1,000 of job vacancies posted by casinos between 2004 and 2007, required only junior secondary education (this number was as high as 3,601 in the second quarter of 2005, and over 2,000 in 2007), the unemployed population at this education level did not record a corresponding decrease. These all represent good evidences reflecting problems of structural unemployment and mismatch of labor[8] in the Macao economy, as well as explaining the recent conflicts between some members of the local workforce and the imported labor.

5. Human resource problems faced by the casino industry

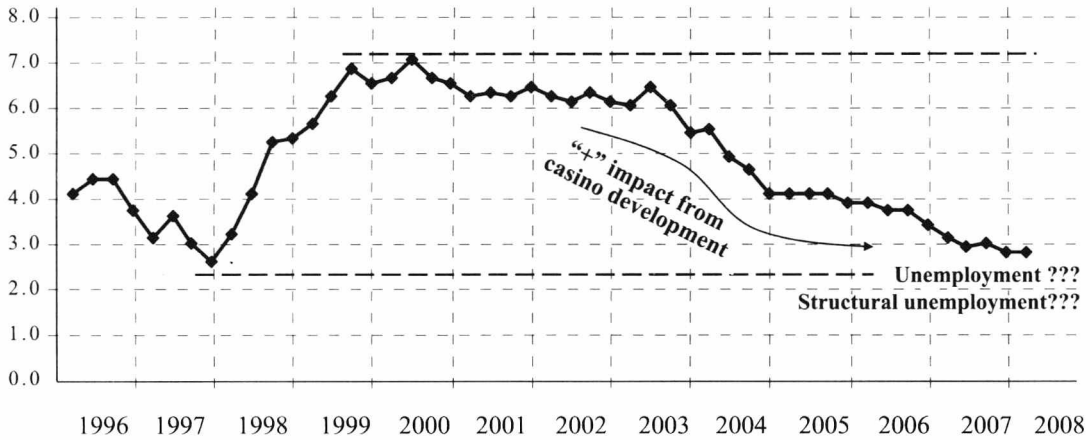
If the economic definition of full employment[9] was applied, Macao achieved its full level of employment in 2007, or even in 2006 when the reported unemployment rate dropped below 4%. Entering into 2008, the reported rate of unemployment of 2.9% was approaching a record low of 2.7%, which was reported in the last quarter of 1997. As shown in Figure 2-1, since the re-development of the casino industry was introduced in 2002, the reported

[8] According to Hamermesh and Ress (1998), Chapter 15, it is argued that in any given period of time, if unemployment rate is getting higher while the reported job vacancy rate remains no change, the Beveridge curve will shift to the right, implying that mismatch of labor takes place. In this study, although available data may not be sufficient to construct a Beveridge curve for the casino industry, phenomena are found in line with the concept of mismatch of labor.

[9] See Wikipedia: "full employment". http://en.wikipedia.org/wiki/Full_employment; also, see related discussion from Samuelson and Nordhaus (1995), pp. 562-566, 752, 758.

unemployment rate had been pushed down significantly from its record high of 7.2% in 2000. Economists may agree that it could be too costly, in terms of a raise in labor costs, to an economy to further lower unemployment rate from the existing level (i.e., 2.9%).

Figure 2-1 Changes in Macao's official unemployment rate (1996q1 – 2008q1)



Nevertheless, the decreasing rate of unemployment as presented in Figure 2-1 contradicts with the change in the absolute number of the unemployed population as stated in the upper section of Table 2-5. A major factor leading to the contradiction could be traced to the rapid increase in the size of imported labor. Indeed, if imported labor were excluded from the measurement of Macao's unemployment rate, the rate would be much higher because the base (the denominator) of Macao's local working population is relatively small in size (further insight and consequences of this issue will be examined in details in Chapter 7). While the reported unemployment rate may have significantly understated the real unemployment situation of the local workforce, and the unemployed population is not matched with the rapid expanding demand for labor from the casino industry, it becomes quite a difficult undertaking for any individual casino or the entire industry, to effectively plan and structure its human resourcing.

Concisely, Macao's current human resources deficiency has exerted high cost and efficiency pressure, which hampers sustainable growth of its casino industry in the near future. Based on the facts as identified in the current literature, empirical studies are designed to give more insight into Macao's gaming human resources deficiency issues, thus providing pragmatic suggestions to improve and secure the sustainable growth of the casino industry. The design of two surveys and the findings will be presented in the next three chapters.

3

Scope, Limitations and Research Methodologies

1. The scope

Our examination of the Macao casino labor force focused on the frontline employees of casino hotels. By nature, the casino industry is a service industry and services are provided by frontline employees. These employees include casino workers directly engaged in person-to-person interactions with customers and lower-level managers who supervise the employee-customer interactions and the production of casino services. In essence, they are the casino employees working in revenue centers or on production lines. Therefore, in our examination of labor force quality, the employees interviewed included floor persons, supervisors, hosts, cage cashier, chip rollers, pit bosses, pit managers, etc. Employees working in the backhouse, which includes staff engaged in general and administrative functions including accounting and marketing duties, are not included in our study as these employees are not directly involved in the production or delivery of casino customer services.

In Las Vegas Strip casinos, frontline employees in various revenue centers constitute the majority of casino employees. In 2007, they represented 86% of the entire casino workforce whereas backhouse employees totaled only 14% of all casino employees (Nevada Gaming Control Board, 2007). Macao is developing itself into a Las Vegas type gaming destination and it is reasonable to assume that the frontline vs. backhouse employee composition in the Macao casino gaming industry should eventually be similar to that of the Las Vegas Strip. Therefore, the findings from our analysis will be applicable to at least 86% of all casino employees.

2. Limitations

In our study, labor force quality was examined based on two surveys, a

customer survey and an employee survey. The customer survey was written in Chinese and our survey sample was restricted to visitors who can read Chinese. Foreign visitors who could not read Chinese were not included in the survey. As our findings were based on a survey of Chinese visitors, they may not be applicable to labor quality issues relating to international visitors; however, those foreign visitors represent only a very tiny portion of Macao total visitor population. According to the Statistics and Census Services (DSEC) of the Macao SAR Government, in 2006, out of the 20.7 million visitors to Macao, 98.14% were ethnic Chinese from the China mainland, Hong Kong and Taiwan, whereas only 1.86% of visitors were non-Chinese speaking foreigners. Of course, in the future, if the proportion of international visitors rises significantly, especially after the openings of the new mega casino resorts on the Cotai Strip, it may be necessary to make the survey more inclusive and an English version of survey would then be required.

Secondly, in both of the surveys, from casino customers and casino employees, the questions were designed to cover major issues of labor force quality as discovered in our review of human resources literature and interviews with casino managers. Due to a limited survey time, the surveys could not be exhaustive and only selected major factors related to labor force quality were investigated.

3. Research methodology to identify quantity deficiency

To identify gaming human resources deficiency in terms of quantity, labor force requirements will be examined in terms of near future (2008 to 2012) and later years (2013 to 2017) respectively and then the deficient quantity will be estimated for each future year.

1) Near term (2007 to 2012) labor force requirements

The short-term (2007 to 2012) requirements for casino labor force are made based on projected gross gaming revenues of the five-year period. Gaming revenues are generated by casino employees, therefore an accurate projection of future gross gaming revenues will provide a good estimate of casino labor needs in the years to come. This study projects the labor needs for the Macao casino industry based on the Macao gross gaming revenue projection made by Mellen and Okada (2006), two hospitality analysts of HVS International, a renowned U.S. based global consulting organization focusing on the hotel restaurant, gaming and leisure industries.

The Mellen and Okada (2006) forecast assumes that Macao will follow the growth pattern of Las Vegas and gross gaming revenue will typically be supply-driven in the we build it and they will come manner that Las Vegas gaming developers and operators have often claimed. As Mellen and Okada (2006) states,

"In projecting future revenue for the Macao SAR 'games of fortune' market, the historical development and gaming revenue of the Clark County, Nevada gaming market, (hereinafter referred to as "Las Vegas"), which includes the Las Vegas Strip and downtown Las Vegas, should be considered due to the similarities between the markets and the intended focus of the projects currently under development in the Macao SAR. Analogies between the Las Vegas gaming market and the Macao SAR gaming market can be drawn and serve as a basis for projecting future market-wide demand and revenue for the Macao SAR gaming market" (p. 5).

However, as Mellen and Okada (2006) points out, the analogies between the Las Vegas and Macao markets do not imply that forecasting Macao gross gaming revenue should use the same forecasting method used by Las Vegas, which was based on the yield of a gaming device or table per day, win per unit per day (WPUPD). This is because the Las Vegas gaming market is a typical supply-driven market and the significant continuous additions to the gaming supply over the past three decades have been readily absorbed. Forecasting gross gaming revenue based on the WPUPD and the growth in market-wide supply is a valid approach (Mellen & Okada, 2006), however forecasting gross gaming revenue growth based on historical WPUPD and increase in supply was considered inappropriate for the Macao SAR market for several reasons. First, the WPUPD levels are extraordinarily high due to the market's previous historical monopoly and recently instituted oligopoly, where new additions to supply are constrained by the government's limitation on gaming concessions. Secondly, the unprecedented number of new casinos that are being constructed in Macao over a three-year period is expected to reduce significantly the market WPUPD. Furthermore, the Macao gross gaming revenues will not be driven significantly by a local segment, as opposed to Las Vegas (Mellen & Okada, 2006). Therefore, forecasted gross gaming revenues for Macao are based upon the historical revenue per visitor days (WPVD), grown at an estimated rate and multiplied by the number of visitor days forecast per year over the projection period.

While the size of gross gaming revenue is one determinant needed for gaming labor force, the productivity of the gaming-engaged employees is the other necessary determinant. It is logical to assume that all things being equal, a greater volume of gross gaming revenue would require a larger gaming labor force whereas greater labor productivity will require a smaller gaming labor force. Therefore, the productivity of Macao gaming employees was investigated before the future quantity of gaming labor was determined. Here the casino employee productivity was measured by gross gaming revenue per employee per year. Dividing the annual gaming revenue for 2007 to 2012, as forecasted by Mellen and Okada (2006), by the gross gaming revenue created per employee per year in the Macao casino industry, the quantity of employees directly engaged in gross gaming revenue creation was estimated for each year. The labor force shortage was determined by subtracting the number of Macao casino employees at the end of 2007 from the

estimated labor force needed for each year.

2) Labor force needs beyond 2012

The estimate of Macao's labor force needs in the gaming industry beyond 2012 was based on a forecast of Macao visitor arrivals from 2013 to 2018. A regression model using time series data of Macao visitor arrivals from 1999, when the Macao SAR was established, through 2007 was estimated. Then the model was used to predict the visitor arrivals in Macao from 2013 to 2018.

A gaming employee/visitor ratio was derived based on the 2007 Macao tourists and gaming employees statistics. The ratio was multiplied to the predicted annual visitor arrivals to produce the estimated gaming employees needed for each year from 2013 to 2017. The 2007 Macao tourists and gaming employees statistics were the most recent information available when this study was conducted. Therefore, the gaming employee/visitor ratio is derived based on statistics that represent the closest to what market condition could be in 2013 and beyond.

4. Methodology used to examine Macao labor quality

1) Convenience sampling

Macao labor force quality was investigated from the perspectives of the customer and casino employees. We collected opinions from both Macao casino patrons and casino employees to determine the quality of the labor force and identify if there were any problems. Two surveys were conducted, one among Macao casino customers and the other among casino employees.

As an exploratory study, our investigation used the convenience sampling method to collect data from Macao casino customers and employees. According to Zikmund (1996), convenience sampling refers to the sampling method of obtaining information from the people or units that are most conveniently available. Researchers generally use convenience samples to gather a large number of completed questionnaires quickly and economically. Convenience samples are best used for exploratory research when additional research will subsequently be conducted with a probability sample.

2) Examining labor quality from the customer perspective

a. The customer questionnaire design

Elements of good customer service

When proposing the basic components of good casino guest service, Ellis (2006) argues that good customer service relies heavily on confidence, courtesy, and communication. While confidence can be found in an employee's smile and eye contact with the customer, courtesy is often shown in an employee's respect to the guest. On the other hand, good communication would enable casino workers to understand what the customer needs and wants. Ellis (2007a) further points out that observant employees' offering to help guests before they ask is an important component of good customer service. According to *Harvard Business Review* (2007), smile plays a critical role in customer service in the hospitality industry: the bigger the employee's smile, the more likely a customer would view them as competent thus making a happier customer.

Kale (2006) suggests that Macao's casino employee training programs should first of all teach employees the philosophy of customer-centrism. With this philosophy in mind, casino employees should learn how to greet customers, diagnose customer problems, demonstrate customer empathy and communicate effectively with guests.

Commenting on how to improve the service of Macao casino dealers, a Macao casino executive (*Macao Daily News*, April 13, 2006), with more than 20 years' casino experience, indicated that the dealer jobs in Macao should be humanized by adding more interpersonal requirements. Besides providing technical training to improve gaming skills, casinos should cultivate a customer-above-all mindset among dealers. In particular, friendliness and respectfulness shown to customers along with communication skills are as important as technical skills. Therefore, the criteria for evaluating the job performance or the quality of a casino's labour force, especially dealers, should include both technical and interpersonal aspects.

We identified respect, communication, smiling, greeting and willingness to help as essential requirements for casino employees in terms of interpersonal skills and these essential requirements were confirmed by casino managers we interviewed in Macao and Las Vegas.

Survey questions

The best way to assess the service quality of Macao casinos is to obtain input from the guests. Therefore, this study is survey-based and a casino customer survey was designed with questions encompassing both technical and interpersonal aspects of service provided by casino employees. After revisions based on a pilot-test of the survey among 67 gaming-major students of University of Macau in late 2006 and 68 casino visitors in early 2007, the survey was finalized with 11 questions.

The first nine questions in the survey use the five-point likert-scale to provide a measure of a casino's customer service quality. Here, 1 means the least favourable or worst situation; 2 indicates a unfavourable level; 3 implies mediocre or average; 4 represents a level that is better than average or satisfactory; and 5 refers to the most favourable or excellent status. The first five questions are about "respect", "smile", "greet", "help" and "communication" in employees' interactions with

customers. These five service features are heavily emphasized in employee handbooks of major casino resorts on the Las Vegas Strip. The sixth question is about whether dealers ask or hint for tips, which is included because asking for tips was a common practice in the older Macao casinos. These first six questions were designed to evaluate the interpersonal or human side of service quality. The next two questions dealt with the technical quality of dealers, gaming skilfulness and error rate. The ninth question and last likert-scale question asks the guests about their overall assessment of the service quality, which serves as an indicator of the customer's overall satisfaction with the casino. The tenth question, a non-likert-scale question, asks about guests' prior experience to other gaming destinations and question 11, the last one in the survey, is an open-end question inviting comments and suggestions.

Below is a list of the 11 survey questions:
Question 1 Do casino employees respect guests?
Question 2 Do employees smile to guests?
Question 3 Do employees greet guests?
Question 4 Do employees take initiative to help customers?
Question 5 Do you find it difficult to communicate with employees?
Question 6 Do dealers ask or hint for tips?
Question 7 Are you satisfied with dealers' dealing skills?
Question 8 How often do dealers make mistakes?
Question 9 What is your overall assessment of the service quality?
Question 10 Have you been to casinos in other destinations? If yes, where?
Question 11 What are your comments and suggestions for the casino?

The survey was purposely designed with concise questions because it would be conducted by students of University of Macau among departing casino guests when they were waiting for casino shuttle buses to the Macao International Airport, the Macau-Hong Kong Ferry Port and the border crossing to mainland China.

Data collection

To make the survey results more representative of the year round service quality of Macao casinos, the survey was conducted at two separate times. The three mainland China holiday weeks or "Golden Weeks", Chinese New Year week (normally in February), Labour Day week (in May) and Chinese National Day week (in October), have created three distinct peak seasons for Macao casinos during the year. During those weeks, large numbers of visitors flock from China and swarm into Macao casinos and these extremely busy periods could have a negative impact on service quality. Since 2001 visitors during the "Golden Week" months have accounted for about 25% of entire year's visitor volume. Therefore, to make the results reflective of service quality during both busy and normal times, 260 or

about 25% of survey responses were collected in the Chinese New Year week which was the third week in February 2007 and the rest, 762 or 75%, were collected in the third week of March 2007, which represents a normal week of operation. By conducting survey this way, the busy holiday season effect on service quality, if any, could be accounted for.

Among the 1,022 collected survey forms, 485 or 48% were from casinos belonging to SJM, 223 or 22% were from casinos operated by Galaxy Casino, 206 or 20% were obtained from the Sands Casino operated by the Venetian Macao, and 107 or 10% were derived from the Wynn Resort (Macao). The percentages of the survey forms collected from the four gaming license holders were approximately the same as their market shares in Macao based on their 2006 gross gaming revenues. 23 survey forms with incomplete information were not used in analysis. The final sample contained 999 useable survey responses with 478 from SJM, 220 from Galaxy, 200 from Sands and 101 from Wynn.

b. Analytical methods

For the nine likert-scale questions, the survey results were first compared between those who had prior experience of visiting casinos in other destinations and those who had no such experience. Prior experience in other gaming destinations may have an impact on survey scores of the likert-scale questions due to benchmarking effect. Survey participants who had visited other gaming destinations may give lower or higher scores to Macao casinos because they had some benchmark to compare with. Here, t-tests were performed to examine if the mean scores given by those who had visited other destinations were significantly higher or lower than the mean scores assigned by those who had no such experiences.

Secondly, the mean scores derived from the first nine questions were compared across the four companies. The one-way ANOVA test (Kleinbaum *et al.*, 1988, pp. 344-345) was used to determine if there were significant differences in the mean scores across the four casino companies. Furthermore, the study examined the associations between the scores of the first eight questions and that of the ninth question on overall satisfaction to see if the answers to the first eight questions may provide explanations to the overall customer satisfaction.

Finally, the backward stepwise regression method proposed by Stevens (1986, p. 68) was used to estimate a model, with customer overall satisfaction derived from question nine as the dependent variable and the service quality features obtained from questions one through eight as the independent variables. According to Stevens (1986, p. 68), the steps of a backward selection regression procedure are: 1) estimating a regression equation with all candidate variables included; 2) calculating the partial F-value for each variable, treated as if it were the last variable to enter the regression equation; and 3) comparing the smallest partial F-value with a predetermined cut-off significance F-value. If the smallest partial F-value is less

than the cut-off significance, the variable is removed. After the first variable is removed, the variable remaining in the equation with the smallest partial F-value is considered next. The procedure stops when no variables in the equation satisfy the removal criteria. In this study, the cut-off significant F value was selected at the 0.05 level. The purpose of estimating the model is to identify factors that may have significantly contributed to the overall satisfaction, thus providing clues as to how Macao casinos may increase their overall customer satisfaction by improving relevant service features.

3) Examining labor quality based on employee self-assessment

Another way to evaluate the labor force quality of the Macao casino industry is to obtain inputs directly from the casino employees. Therefore, this study is also employee survey-based and a questionnaire was designed for casino employees, with questions regarding job skills, work ethics and job satisfaction and morale. After revisions based on pilot-tests of the survey among 35 gaming-major students of the University of Macau and 15 casino employees, the survey was finalized with 23 questions.

a. The employee questionnaire design

Important job skills for casino employees

The casino industry is a service industry that involves significant amount of person-to-person interactions between employees, especially dealers, and customers. Therefore, both technical and interpersonal skills are important aspects of labor force quality. These skills will directly affect the quality of a casino hotel's customer service. According to Ellis (2006 & 2007), while casino workers' technical and communication skills are vital, employee's confidence and courtesy also contribute greatly to customer satisfaction. Confidence and courtesy are often reflected in workers' greeting and smiling to customers and willingness to help. Especially, as *Harvard Business Review* (2007) points out, smile is essential in making customers satisfied in hospitality business. An employee's big smile is viewed by a customer as demonstration of competency and they feel happy when treated by a competent employee. In employee manuals of major Las Vegas Strip casino hotels, communication skill, greeting, smiling and being helpful are heavily emphasized job requirements.

Commenting on the job requirements for casino dealers, a Macao casino executive with over 20 years' casino experience suggested that dealers' performance should be judged from both technical and humanization aspects and the dealer job must be humanized by adding more interpersonal requirements in Macao ("Dealer job should be", 2006). As the executive pointed out, being customer-friendly and communicating well with customers are as essential as

gaming skills. Remarking on customer service in Macao casinos, Kale (2006) proposed that customer-centrism should be established among casino employees and they need to learn how to greet customers, diagnose customer problems, demonstrate customer empathy and communicate effectively with guests.

Job satisfaction as important part of labor quality

In a service industry, while good technical and interpersonal skills are essential, the two alone cannot guarantee customer satisfaction. Customer services are provided by the casino employee and the employee's mood will directly affect the services provided. Therefore, customer satisfaction must be backed up by employee job satisfaction. Employee morale and job satisfaction are demonstrated in the process of delivering services and felt by customers and they are indeed an integral part of quality issues within the labor force.

Pearce (1992) points out that outputs from the service industries are intangible goods and quality or value of services gained by the consumers are largely determined by the instantaneous performance of the service employees. In a gaming operation, services are jointly provided by dealers and related personnel and the on-site performance of the casino employees determine the service quality extended to the customers. Employee job satisfaction directly affects the mood and manner in which the service is performed and hence affecting the service quality experienced by the customer. Extensive studies suggest that job satisfaction plays a crucial role in sustaining the performance of service employees in the workplace, hence the service quality provided to customers (Lee, Nam, Park & Lee, 2006; Karl, 2006; MacKenzie, Podsakoff & Ahearne, 1998; Netemeyer, Boles, McKee & McMurrian, 1997; Rogers, Clow & Kash, 1994; Hoffman & Ingram, 1992).

As ascertained by Hoffman and Ingram (1992), if a business wants to satisfy the needs of its customers, it must first satisfy the needs of its employees. Front-line workers' overall job satisfaction is positively correlated with their customer-oriented behavior. Rogers *et al.* (1994) points out that for service employees who frequently interact with customers, "it is very difficult to serve customers well when employees are unhappy and disgruntled about some aspect of their job" (p. 20). Satisfied employees create satisfied customers (Karl, 2006).

Employee satisfaction not only ensures customer service quality, but also contributes to employee retention and commitment, hence adding to the human assets quality of a firm and elevating its competitiveness in the market (Lee *et al.*, 2006). Empirically, Karl (2006) found that satisfied employees believed that their organization provided customer service that was reliable, responsive, and empathetic, and that employees were knowledgeable and able to instill confidence in customers. For these reasons, it is essential for service firms to understand the drivers behind employee job satisfaction.

Job satisfaction drivers

As employee job satisfaction is an inseparable part of labor force quality in Macao casinos, it is important for us to identify employee satisfaction drivers for the purpose to determine how to improve labor quality. Therefore, factors that affect Macao casino employees' morale and job satisfaction were also surveyed and examined. As reported by *HR Focus* (2007), the *Society for Human Resources Management (SHRM) 2007 Job Satisfaction Survey* has found that satisfied employees are more likely to stay with their employers and compensation and benefits were ranked equally as the most important ingredients of job satisfaction. These findings confirm results presented in various studies of the service sectors. For example, in their study of Korean hotel employees, Lee *et al.* (2006) found that "service reward has a significant influence on job satisfaction and organizational commitment" (p. 251).

In addition to compensation and benefits, the *SHRM 2007 Job Satisfaction Survey (HR Focus,* 2007*)* also reveals that job satisfaction of service employees is affected by such elements as communication between employees and senior management, relationship with immediate supervisor, and management recognition of employee job. These attributes are in congruence with findings from earlier studies. For example, Rogers *et al.* (1994) have found that employee job satisfaction is negatively affected by job tension, and positively affected by role clarity. MacKenzie *et al.* (1998) claims that employee job satisfaction is negatively affected by both role ambiguity and role conflict. Indeed, effective communication between employees at various levels and management recognition of employee job performance are essential to promote role clarity, and lessen job tension. Especially, support, encouragement, guidance and help from management and colleagues are likely to promote a harmonious working environment in which employee job satisfaction is likely to sustain.

Last but not least, many recent studies have identified that offering of continuous job training to service employees (especially those who interact with high volume of customers everyday) would improve their job satisfaction, hence organizational performance. Training would "improve skills and abilities relevant to employees' tasks and development", and "increase employees' satisfaction with their jobs and workplaces" (Harel & Tzafrir, 1999, p. 187). According to Harel & Tzafrir (1999, p. 185), "the single [most] independent variable found to be statistically significant in affecting perceived organizational performance was training practices". Moreover, training is an essential factor for strengthening employees' commitment to the firm. Lee *et al.* (2006) found that training was positively associated with service workers' job satisfaction and organizational commitment.

Realizing the importance of job satisfaction on employee performance and service quality, this study analyzes labor force quality in Macao casinos by examining not only job skills but also employee job satisfaction and factors contributing to job satisfaction.

Survey questions

The first six questions were about survey participants' backgrounds including age, education, job position, prior training program participation, company affiliation, and years of work experience in the casino industry. The next ten questions asked casino employees to self-assess their job performance as below:

Question 7	How fluent is your Mandarin?
Question 8	How difficult is it for you to communicate with Mandarin-speaking customers?
Question 9	Do you know any foreign language(s) (specify)?
Question 10	How often do you smile to guests?
Question 11	How often do you greet guests?
Question 12	How often do you take initiative to help guests?
Question 13	How often do you ask or hint for tips?
Question 14	How often do you make gaming mistakes?
Question 15	How many casino games can you operate?
Question 16	How skillful are you with the games you operate?

Questions 7 through 9 were about language and communication ability. Mandarin-speaking visitors from China's Mainland and Taiwan were the majority (61%) of tourists to Macao in 2006 (DSEC, 2006) therefore being able to speak Mandarin is an important job skill. On the other hand, the openings of a series of Las Vegas-style casinos in Macao are transforming Macao from a regional market to an international destination, making foreign language ability increasingly important; thus, employees' foreign language knowledge was also surveyed.

Questions 10 to 12 were about "smile", "greet" and "help" features related to personal skills. Questions 13 to 16 were for dealers only. Question 13 was designed to examine dealer ethics in terms of tip pursuit. Dealers' tip pursuits would upset players and is strictly prohibited in Las Vegas Strip casinos but was commonplace in Macao casinos in the old days. Questions 14 through 16 evaluate dealers' gaming skills.

The five-point likert-scale was used for all the above questions except questions 9 and 15. Here, 1 means the worst situation; 2 indicates a unfavorable level; 3 implies a mediocre or average state; 4 represents a situation that is satisfactory or better than average; and 5 refers to the most desirable status. In question 9, knowledge of foreign languages was measured as a dummy variable with 0 indicating knowing no foreign language(s) and 1 indicating knowing at least one foreign language. For question 15, measurement was the actual number of games the dealer can handle. To investigate casino employees' job satisfaction and morale, the following questions were asked based on reviewed literature.

Question 17	How satisfied are you with your casino?
Question 18	How satisfied are you with your salary and benefits?
Question 19	How often do you receive support, encouragement, guidance and help from your superiors and coworkers?
Question 20	Is the job training provided by your casino helpful?
Question 21	Do you have job-related stress?
Question 22	Do you intend to transfer to another casino?
Question 23	Do you intend to quit working in the casino industry?

Question 17 was about employees' overall satisfaction with the firm and questions 18 through 21 focused on factors that may affect job satisfaction. The last two questions were about the employee's morale or commitment to the casino and the industry. Here, the five-point likert-scale was again used for measurement. For questions 17 to 20, 1 means the most unfavorable or worst situation; 2 indicates a unfavorable level; 3 implies mediocre or average; 4 represents a situation that is satisfactory or better than average; and 5 refers to a very satisfactory or excellent status. For questions 21 to 23, however, the five-point likert-scale was used in an opposite direction, with higher scores indicating less desirable situations.

The design of the survey was based on not only extensive review of literature on human resources but also interviews with casino managers in Macao and Las Vegas. The importance of job satisfaction to casino employees' job performance and potential job satisfaction drivers were confirmed by casino managers during our interviews with them.

Data collection

Gaming major students of the University of Macau carried out the survey in March 2007. To conduct the survey, the students approached casino employees who were their family members, relatives or friends or were referred to them by family members, relatives or friends. Verbal consent to the survey was obtained from the surveyed before the survey started. A casino employee would be skipped if another student had already surveyed them and altogether 957 casino employees were contacted and agreed to answer the survey questions. After deleting feedbacks with incomplete answers, 892 survey forms were retained as the final sample. Among the 892 responses, 399 or 44.7% were obtained by phone calls and the rest, 493 or 55.3%, were collected through face-to-face interviews.

b. Analytical methods

For questions 7 through 23, when applicable, descriptive statistics, including mean, median, and standard deviation, of the likert scores were computed for assessment of the status of job skills, dealer ethics, job satisfaction and morale. Furthermore, coefficients of correlations between employee overall satisfaction and

job skills, ethics and morale variables were computed to see how job satisfaction may be related to those variables.

Finally, in an attempt to identify drivers of employee satisfaction, a regression model was estimated using the backward stepwise procedure (Stevens, 1986). Here, employee overall job satisfaction was treated as the dependent variable and salaries and benefits, support, encouragement, guidance and help from supervisors and coworkers, training opportunities, and job-related stress were used as candidate independent variables. It is reasonable to assume that the first three variables should positively contribute to overall employee satisfaction and job-related stress may have a negative impact. The dependent variable and the four independent variables were all measured by likert scores.

Employee backgrounds such as gender, age, education, previous training program participation and work experience may affect employee overall satisfaction and were therefore added as control variables. Female and older employees may be more concerned about job security and thus may tend to be more easily satisfied with the firm. Education level, prior training program participation, and years of work experience may also affect job satisfaction either positively or negatively. On one hand, better educated, trained and more experienced employees may perceive themselves as better qualified and may thus be harder to please and less satisfied with the firm. On the other hand, higher education, more prior training and longer work experience may help lower job related stress and increase employee satisfaction. In the model estimation, gender and prior training were treated as dummy variables with 0 indicating female, or without prior training, and 1 indicating male, or with prior training. Work experience was measured by number of years in the casino industry. Education and age was measured by numeric category values, with higher values indicating higher education levels or older age groups.

4

Casino Labor Force Quantity Deficiency

1. Reasons for a two stage forecast

To identify Macao's gaming human resource quantity deficiency, labor force needs were forecasted for two stages, short term (2008 to 2012) and long range (2013 to 2017), respectively. The reason for making short-term and long-term estimates separately is that the degrees of uncertainties associated with various time intervals are different. Besides, it is assumed that productivity of gaming labor as presented in 2007 is a constant throughout the period of estimation. In this study, it is worthwhile to highlight that forecasting always involves uncertainties. Actual results often differ significantly from forecasts because of changing circumstances. Generally speaking, the longer the projection horizon, the less accurate the projection, because the longer projection encounters more uncertainties.

The short-term (2008 to 2012) gross gaming revenue forecast for Macao should be considered more reliable because the near-term regional market conditions for casino gaming are expected to be fairly stable and the following factors are likely to contribute to Macao's casino gaming stability in the near future. First, the oligopolistic structure of Macao's gaming industry does not seem likely to change any time soon due to the limitations on market entry represented by the three licenses and associated three sub-license structure. This limiting of market entry will put a brake on rampant gaming expansions in Macao. Second, the competition from outside of Macao in the region should remain minimal for the next several years. Although the opening of a casino resort in Singapore in 2010 may present some challenge to Macao casino operations, the impact, if any, would be negligible because Singapore is over 2,500 kilometers from Macao and they each have quite different target markets. Third, there are no foreseeable changes in the Chinese mainland market, which is the most important market for Macao casinos in the near future. Although governments at various levels may occasionally place controls on the flow of visitors to Macao, it is unlikely that the Central Government will totally revise its Individual Visit Scheme (IVS) for Chinese citizens traveling to Hong Kong and

Macao.

However, when looking at a longer period, there are some uncertainties that may change the market conditions significantly for Macao's casino industry and make long-range gaming forecasting difficult and less reliable. First, if more gaming licenses and sub-licenses are eventually issued, then Macao's gaming capacity will increase dramatically and so will the need for casino employees. Second, Japan and Taiwan have been actively looking at legalizing casino gaming but so far no favorable actions have been taken. In a longer period, gaming legalization may finally materialize and these destinations could become strong competitors for Macao. The worst uncertainty is the possibility of gaming legalization in some under-developed regions in Chinese mainland, such as Hainan Province. There have been propositions in the Chinese Mainland to open casinos in Hainan and Ninxia Provinces to help develop local economies. However, while it does not appear that these propositions will be adopted soon, but they could take place in the more distant future. If casino gaming is legalized in just a few Chinese cities, then Macao's gaming market will be deeply eroded and visitor flows from China will shrink. Given the above-mentioned long-range uncertainties, we must admit that the long-range forecast made in this study is less reliable than the forecast made for the next five years. The purpose of conducting the long-range forecast is merely to provide some rough estimates for decision makers on Macao's need for casino workers.

2. The short-term labor force shortage

With a total population of 538,100 and a labor force (including imported labor) of 309,800 at the end of 2007 (DSEC, 2008), Macao has found it challenging to meet the casino industry's human resources demand. Serious labor shortages started to occur after the grand opening of Sands Macao in 2004. The *Macao Daily News* (March 31, 2005) reported that 7,104 casino positions were unfilled by the end of 2004and despite various training programs sponsored by the Government and casino companies, casino labor shortage continues to be a serious issue for the industry. By the end of 2007, Macao casinos had 3,411 unfilled job vacancies (DSEC, 2008), equivalent to 7.6% of the industry's existing 44,743 employees.

Labor force shortage has been a bottleneck for Macao, which relies heavily on the gaming industry as the "Dragon Head" of its economic development and will become more problematic when new mega casino resorts open up in the future in the Cotai Strip. Finding sufficient labor for its casino industry is a long-term strategic issue for both the industry and the Macao SAR Government. To resolve this issue, one must first have a clear vision of how many casino labors would be needed in the future. The purpose of this section is to forecast the labor needs for the Macao casino industry from 2008 through 2012 based on projected gross gaming revenues. Casino labor force needs based on different casino revenue (which

includes both gaming revenue and non-gaming revenue such as that derived from hotel, restaurant, retail, convention, etc.) diversification scenarios will be estimated.

a) Macao gross gaming revenue projection: 2007 to 2012

Casino employees generate gross gaming revenues. An accurate projection of future gaming revenues will provide a good estimate of casino labor needs in the years to come. For the near future casino labor force requirements in Macao, this study utilized the Macao gross gaming revenue projection report made by Mellen and Okada (2006). To the best of our knowledge, this is the only available report that has forecasted the gross gaming revenue growth in Macao for a five-year long period in a sound and highly analytical manner. The Mellen and Okada (2006) forecast assumes that Macao will follow the growth pattern of Las Vegas. Table 4-1 presents the gross gaming revenue projection made in the report.

Table 4-1 Macao gross gaming revenue forecast

Year	**HVS forecasted gaming revenue** (US$)
2007	8,552,002,786
2008	10,650,392,075
2009	12,839,526,768
2010	13,877,523,746
2011	14,860,274,977
2012	15,915,183,365

The report's projection was made in late 2006 (Mellen & Okada, 2006). As we can see from the table, the report's projection of 2007 gross gaming revenue was much lower than Macao's actual gross gaming revenue in 2007, US$10.3 billion (DICJ of the Macao SAR Government, 2008). Its 2010 gross gaming revenue projection, US$13.9 billion, is slightly above the number projected by Wall Street analyst Stutz (2007), US$12 to 13 billion.

In our opinion, the projected numbers in Table 4-1 represent relatively conservative estimation of the gross gaming revenues in Macao for the next several years and the forecasted numbers could easily be reached or passed. There are two major reasons to support our assumption. First, the Mellen and Okada report (2006) assumes that the Macao gaming market will follow the growth pattern of Las Vegas and gross gaming revenue will be typically supply-driven. Given that assumption, the report failed to consider the demand side. In fact, the strong gaming revenue growth is not only driven by the supply side or the gaming capacity in Macao, but is also driven by the economy of Mainland China, which may well be the most important factor. The growing gaming demand of mainland Chinese gamblers propelled by economic prosperity is likely to make Mellen and Okada's (2006)

supply-based forecast an underestimate of future gross gaming revenues. Secondly, because of the fast economy growth in the region, the Macao market will continue to be dominated by risk-taking players. Friedman and Savage (1948) posit that in the transition from being less wealthy to wealthy, people's risk attitude may switch from risk-averse to risk-taking. The fast economic growth in Asia, especially in China, is not only increasing the number of people who can afford to gamble but also making people more risk-taking in gaming actions. Therefore, the Mellen and Okada (2006) projection of Macao gross gaming revenue is more likely to be a conservative, rather than aggressive, forecast of Macao gross gaming revenues in the years to come and our projections of labor force need based on their gross gaming revenue forecast are therefore also conservative estimates.

b) Labor productivity: Macao vs. the Las Vegas Strip

The gaming labor need is closely related to gaming labor productivity. For any given amount of gross gaming revenue, the higher the labor productivity, the smaller the required labor force. To estimate the required amount of a casino labor force, an examination of its current gaming labor productivity is needed. Table 4-2 presents Macao casino labor productivity measured in terms of gross gaming revenue per casino employee since 2004. The DICJ (2008) of the Macao SAR Government published the gross gaming revenues, while gaming employee numbers were taken from the website of the DSEC of the Macao SAR Government (2008). Gross gaming revenue per employee statistics of 2003 and earlier were not listed because the number of gaming employees from 2003 and earlier were not available. To obtain the gross gaming revenue per employee, the average number of gaming employees during a year was derived by taking the average of gaming employees at the end of two consecutive years. Using the average employees to divide the annual gaming revenue, the study derived a per employee gaming revenue for each of the four years from 2004 to 2007 as shown in Table 4-2.

Table 4-2 Macao casino gaming employee productivity

Year	**Gaming revenue** (US$)	**Gaming employee**	**Gaming revenue per employee** (US$)
2004	5,023,375,000	18,005	278,999
2005	5,590,625,000	23,693	235,961
2006	6,875,000,000	31,266	219,887
2007	10,377,000,000	40,575	255,748

The table indicates that over the three years from 2004 to 2007, gross gaming revenue per employee in Macao continuously dropped. In 2007, however, it climbed back significantly to US$255,748. There are two plausible reasons that may explain the observed drop in per employee gross gaming revenue from 2004 to 2006. First, Macao casino labor productivity may have decreased due to the many newly

hired employees in the Macao casino industry since the opening of Sands Macao in 2004. Second, the revenue share of mass-market operations, which are more labor-intensive, were rising from 2004 to 2006 relative to revenue from VIP operations, which are less labor-intensive. Mass gaming operations need more dealers than VIP operations for the same amount of gross gaming revenue, hence the lower per employee gross gaming revenues. The inexperience of new hires in the industry plus the declining VIP operation share were the likely reasons for the declining gross gaming revenue per employee for 2004 to 2006.

Several factors may have contributed to the big jump in gross gaming revenue per employee in 2007. First, in 2007, especially since late 2007, the trend of declining VIP operation share in the Macao gaming market has reversed and the VIP operation has regained a growth momentum. In 2007 the VIP share of the total gaming revenue increased from the previous year's 65% to 70% (*Macao Daily News*, April 18, 2008). As VIP operations are less labor-intensive, the significant comeback of VIP operations in 2007 should have helped raise the gross gaming revenue per employee of the year. Second, the increasing slot revenue share in the total gaming revenue should have an impact on the rising gross gaming revenue per employee. In 2005, slot revenue constituted only 2.7% of the total gaming revenues. It increased to 3.6% and 4.3% of gross gaming revenues in 2006 and 2007, respectively. The rising slot revenue share in the Macao gaming market should be a plus factor that helps increase the casino employee productivity. Finally, the significant rise in gross gaming revenue per employee in 2007 may indicate that efforts of the Government and the industry in implementing various training programs to improve gaming employees' skills and labor productivity over the past several years are eventually paying off. Macao casino workers are now certainly becoming more skillful and productive and their job efficiency appears to have substantially improved in contrast to their performance a few years ago.

It must be emphasized that slot operations can have a significant impact on casino labor productivity in terms of gross gaming revenue per employee and this carries an important implication for the Macao gaming industry in handling its labor shortage problem. The consistent rise of Las Vegas Strip gross gaming revenue per employee since 1990 provides a classical example of how increasing slot operations can raise the labor productivity in terms of gross gaming revenue per employee. Table 4-3 below provides gaming revenue per employee of Las Vegas Strip casinos from 1990 to 2007. It indicates that during this period, gaming revenue per employee more than doubled, increasing from US$104,201 in 1990 to US$248,864 in 2007. Table 4-4 provides the statistics of slot revenue versus total gaming revenue and the percentage of slot revenue in total gaming revenue on the Strip. The table shows that from 1990 to 2007, slot revenue as a percentage of total gaming revenue has risen from 47.03% to 52.75%. Evidently, increasing reliance on slots has decreased the importance of table games as revenue generators and the need for gaming employees. Rising weight of slot operations on the Strip has made the gaming operations on the Strip more equipment-intensive and less labor-intensive,

thus helping raise the gross gaming revenue per employee for the Las Vegas Strip casinos over the time.

Table 4-3 Las Vegas Strip casino gaming employee productivity

Year	Gross gaming revenue (US$)	Gaming employee	Gross gaming revenue per employee (US$)
1990	2,278,666,097	21,868	104,201
1991	2,616,868,246	20,283	129,018
1992	2,530,932,046	19,598	129,142
1993	2,680,865,771	18,940	141,545
1994	3,188,994,040	23,779	134,110
1995	3,516,053,825	23,100	152,210
1996	3,629,745,193	23,366	155,343
1997	3,650,458,259	23,056	158,330
1998	3,717,773,057	22,583	164,627
1999	4,128,143,954	25,593	161,300
2000	4,683,729,471	25,471	183,885
2001	4,615,644,944	26,602	173,507
2002	4,247,749,172	24,204	175,498
2003	4,490,623,007	23,076	194,601
2004	4,909,991,047	23,636	207,734
2005	5,283,122,106	25,932	203,730
2006	6,040,935,450	27,248	221,702
2007	6,490,880,088	26,082	248,864

Source: *Nevada Gaming Abstract* (1990-2007)

In comparison to the Las Vegas Strip, which derived 52.75% of gross gaming revenues from slots in 2007, Macao had trivial slot operations in 2007 with revenues constituting only 4.3% of total gaming revenues. There is much room left for the Macao casino industry to increase its gross gaming revenue per employee by expanding slot operations. Increasing the reliance on slot operations to increase gross gaming revenue per employee and reduce the share of the labor-intensive table games could be a long-term strategic direction for dealing with a labor force shortage in Macao.

Table 4-4 Las Vegas slots revenue trend (1990-2007)

Year	Gross gaming revenue (US$)	Slot revenue (US$)	Slot revenue %
1990	2,278,666,097	1,071,669,384	47.03
1991	2,616,868,246	1,216,826,118	46.50
1992	2,530,932,046	1,281,673,342	50.64
1993	2,680,865,771	1,362,768,062	50.83

(cont.)

1994	3,188,994,040	1,599,206,057	50.15
1995	3,516,053,825	1,711,649,476	48.68
1996	3,629,745,193	1,738,666,605	47.90
1997	3,650,458,259	1,764,028,676	48.32
1998	3,717,773,057	1,860,747,276	50.05
1999	4,128,143,954	2,017,801,922	48.88
2000	4,683,729,471	2,282,690,487	48.74
2001	4,615,644,944	2,325,523,358	50.38
2002	4,247,749,172	2,255,427,329	53.10
2003	4,490,623,007	2,372,598,529	52.83
2004	4,909,991,047	2,625,753,489	53.48
2005	5,283,122,106	2,881,858,133	54.55
2006	6,040,935,450	3,222,689,071	53.35
2007	6,490,880,088	3,424,262,063	52.75

Source: *Nevada Gaming Abstract* (1990-2007)

It should be pointed out that the efforts to expand VIP operations on the Las Vegas Strip may also have contributed to the rising gross gaming revenue per employee on the Strip. The increased number of private salons in Strip casinos in recent years is evidence of their efforts in luring more high rollers, especially from Asia for their VIP operations (*Las Vegas Review Journal,* January 28, 2005). This also bears important implications for Macao casinos in handling the labor shortage issue. While Las Vegas derives its gross gaming revenues predominantly from the mass-market, Macao has the VIP market as its main revenue source. VIP market operations are less labor-intensive than mass-market operations therefore continuing to rely on VIP operations to generate gross gaming revenue may be a desirable strategic direction for the Macao casino industry given its limited labor supply.

c) Labor force needs estimated based on existing casino revenue structure

To project the Macao casino labor force needed in the future, the 2007 per employee gross gaming revenue (see Table 4-2) was used to divide the gross gaming revenue forecasted by Mellen and Okada (2006) for each year from 2008 through 2012. The resulting number represents the estimated labor force under the assumptions that Macao casino revenue structure, market structure, and labor efficiency will remain the same as it was in 2007. In other words, we assume that the table game dominance, VIP operation dominance and casino employees' work productivity will remain unchanged for the next five years. Table 4-5 shows the estimated labor needs for 2008 to 2012 based on these assumptions.

Table 4-5 Macao gaming employees based on revenue forecast

Year	**HVS forecast gaming revenue** (US$)	**Gaming employee needed**
2008	10,650,392,075	41,644
2009	12,839,526,768	50,204
2010	13,877,523,746	54,262
2011	14,860,274,977	58,105
2012	15,915,183,365	62,230

The estimated gaming labor force needed for 2012 is 62,230 based on Macao's 2007 gaming labor productivity. In other words, if the Macao casino industry is to maintain its focus on VIP operations and gaming dominated casino revenue structure, as it was in 2007, its 2012 labor force would need to grow by about 53% over 2007's labor force of 40,575.

d) Estimated labor requirements based on different diversification scenarios

If Macao is to develop itself into a well diversified gaming destination like Las Vegas, which had gross gaming revenue amounting to only 41% of its total casino revenue (i.e., the sum of gaming and non-gaming revenue) in 2007, then the future need for an increased labor force would be even greater. Since 1990, Las Vegas has been diversifying its casino revenues and the proportions of gross gaming revenue and gaming employees in casino operations have been declining steadily (see Table 4-6). In 1990, gross gaming revenue was 58% of casino revenues and gaming employees were 32% of total casino employees. By 2007, the gross gaming revenue declined to 41% of casino revenues and gaming employees accounted for only 23.9% of all casino employees.

If Macao is to raise its gross gaming revenue and at the same time diversify into non-gaming operations in a scale similar to that of Las Vegas, then Macao will face even greater labor shortage in the future. To project the number of casino employees needed under different casino diversification scenarios, this study established a regression model to estimate the relationship between gaming employee percentage and gross gaming revenue percentage on the Las Vegas Strip. The regression had the gross gaming revenue percentage as the independent variable and gaming employee percentage as the dependent variable and resulted in a model as: $Y = 0 + 0.56\ X$ (Adjusted $R^2 = 0.94$, $F = 15{,}515.27$). The X coefficient, 0.56, implies that in Las Vegas, for every one percentage point of gross gaming revenue in the total casino revenues, there requires only 0.56% of gaming employees among all casino employees. The lower required gaming employee percentage indicates that gaming employees are more productive in revenue generation. If the Macao casino industry is to follow the Las Vegas Strip as its model, then the same relationship between gross gaming revenue and gaming employee should be applicable to Macao.

Table 4-6 Las Vegas Strip casino revenue composition vs. labor force structure

Year	Casino revenue (US$)	Gross gaming revenue (US$)	Gaming revenue %	Total employee	Gaming employee	Gaming employee %
1990	3,939,331,858	2,278,666,097	57.8	68,375	21,868	32.0
1991	4,531,867,842	2,616,868,246	57.7	64,397	20,283	31.5
1992	4,463,692,494	2,530,932,046	56.7	62,264	19,598	31.5
1993	4,707,202,656	2,680,865,771	57.0	60,215	18,940	31.5
1994	5,777,872,257	3,188,994,040	55.2	76,838	23,779	30.9
1995	6,537,678,305	3,516,053,825	53.8	76,862	23,100	30.1
1996	6,866,354,281	3,629,745,193	52.9	80,232	23,366	29.1
1997	7,087,266,194	3,650,458,259	51.3	82,379	23,056	28.0
1998	7,397,825,633	3,717,773,057	50.3	81,650	22,583	27.7
1999	8,585,449,542	4,128,143,954	48.1	98,949	25,593	25.9
2000	10,195,669,758	4,683,729,471	45.9	98,572	25,471	25.8
2001	10,569,540,490	4,615,644,944	43.7	100,365	26,602	26.5
2002	9,882,060,697	4,247,749,172	43.0	94,110	24,204	25.7
2003	10,448,686,493	4,490,623,007	43.0	97,790	23,076	23.6
2004	11,708,498,708	4,909,991,047	41.9	98,071	23,636	24.1
2005	12,906,004,493	5,283,122,106	40.9	109,636	25,932	23.7
2006	14,397,014,698	6,040,935,450	40.4	112,909	27,248	24.1
2007	15,828,237,890	6,490,880,088	41.0	109,117	26,082	23.9

Source: *Nevada Gaming Abstract* (1990-2007)

Assuming Macao is to become a well-diversified casino destination with a gross gaming revenue percentage of 41% of its total casino revenue, just like the Las Vegas Strip casino revenue structure in 2007, then its 2008 projected gaming employees (41,644, see Table 4-4) would be 23% (41% x 0.56) of its casino employees. Further, the entire labor force requirement for a diversified casino industry like that of Las Vegas would be 181,061. Assuming the same 41% gross gaming revenue percentage in casino revenue for 2009 through 2012, the casino labor force needed would be 218,278, 235,922, 252,630 and 270,565, respectively (see Table 4-7, Column 2).

Table 4-7 Macao casino labor needs for different diversification scenarios

Year	Highly diversification - gaming revenue as 41% of casino revenues	Medium diversification - gaming revenue as 50% of casino revenues	Low diversification - gaming revenue as 75% of casino revenues
2008	181,061	148,729	99,152
2009	218,278	179,300	119,533
2010	235,922	193,793	129,195
2011	252,630	207,518	138,345
2012	270,565	222,250	148,167

Table 4-7 also indicates the number of casino employees needed under other casino revenue structure scenarios with gross gaming revenue at 50% and 75% of total casino revenues for 2007 to 2012. As can be seen from the table, the more diversified the casino revenues, the greater need for an increased casino labor force.

e) How many more will be needed?

To provide an estimate of how many new casino employees would need to be added in comparison to Macao casino labor force in 2007, the 2007 average casino employees, 40,575, were subtracted from casino employees projected under different casino diversification scenarios. Table 4-8 provides the number of additional casino employees that would be needed for different levels of diversification for 2008 through 2012. As the table demonstrates, if the Macao casino industry maintains its current gaming-dominated revenue structure, or gross gaming revenue at almost 100% of total casino revenue, then 21,655 more casino employees would be needed by 2012. On the other hand, if Macao casinos were to diversify to the same degree of the Las Vegas Strip, with gross gaming revenue totaling 41% of casino revenues as of 2007, then Macao would need to add another 229,990 employees to its casino industry by 2012.

Table 4-8 Additional casino employees required for 2008 to 2012

Year	**2007 casino employees**	**Increase from 2007** (G=100%)	**Increase from 2007** (G=75%)	**Increase from 2007** (G=50%)	**Increase from 2007** (G=41%)
2008	41,644	1,069	58,577	108,154	140,486
2009	41,644	9,629	78,958	138,725	177,703
2010	41,644	13,687	88,620	153,218	195,347
2011	41,644	17,530	97,770	166,943	212,055
2012	41,644	21,655	107,592	181,675	229,990

In 2007 the entire labor force in Macao, including employed and unemployed, local and imported, were 309,800 (DSEC, 2007). As the additional casino labor force required for supporting a well-diversified casino industry would be 229,990, it is virtually impossible for Macao's internal labor force to grow to a level that could meet the industry's labor demand by 2012. To develop its casino industry, in particular a well-diversified casino industry, Macao would need to expand its population on such a large scale that imported workers would continue to be required and would likely dominate the casino labor force in Macao for the foreseeable future.

3. The long-range labor force shortage

The Mellen and Okada (2006) report did not make any projection on tourist arrivals and gross gaming revenues for Macao beyond 2012. Therefore, this study developed a regression trend model, using Macao tourist arrivals data from 1999 through 2007, to predict tourist arrivals from 2013 to 2017. Further, based on the ratio of tourists to gaming employees in Macao in 2007, the gaming employee's requirements for each year between 2013 and 2017 were projected.

The regression resulted in a model as Y = 3,405,108 + 2,311,838X, where X stands for the annul trend variable. The X coefficient, 2,311,838, implies that since 1999, on average, tourist arrivals have been increasing at a rate of about 2.3 million annually. The model has an F value of 94.033 and a P-value of 0.000, suggesting a high statistical significance. The adjusted R square of the model is 0.921, implying that about 92 percent of the variation in tourist arrivals since 1999 has been explained or predicted by the model.

In 2007, Macao recorded 26,993,000 tourist arrivals and the annual average number of gaming employees was 40,575 giving a ratio of tourists per gaming employee of 655:1. To estimate the gaming employees for the relevant years the tourist arrivals for 2013 to 2017 were forecasted (see Table 4-9) and then the forecasted numbers were divided by 655. Table 4-9 below provides the tourist arrivals forecasted by the regression model and the estimated required number of gaming employees.

Table 4-9 Tourist arrivals and gaming employees long-range forecast (2013-2017)

Year	Forecasted tourist arrivals	Forecasted gaming employees
2013	42,120,900	63,339
2014	44,432,700	66,816
2015	46,744,500	70,292
2016	49,056,300	73,769
2017	51,368,100	77,245

The forecasted gaming employees in 2013 are 63,339, 1,109 higher than the 62,230 gaming employees predicted for 2012 based on the Mellen and Okada (2006) projected gross gaming revenues in our near term forecast. Our long-range prediction of gaming employees appears a reasonable continuation of the projection for the period 2008 through 2012. It should be reminded that this long-range prediction is based on the ratio of tourists to gaming employees in Macao as of 2007. Therefore, the predicted labor force needs for the years 2013 to 2017 are only valid under the assumption that Macao's gaming-dominated casino revenue structure will remain unchanged for those future years.

4. Variance factors in labor force projection

In both our short-term and long-range forecasts of casino labor forces, there are important factors that may cause significant variances from the projected numbers. As discussed earlier, those factors include the industry's gross gaming revenue structure, namely slot revenue versus table revenue; the degree of Macao's casino industry diversification, namely gross gaming revenue versus non-gaming revenues; and, the competition from emerging destinations in neighboring countries or regions. While the Macao casino industry and/or the Government control the first two factors, the last factor is uncontrollable. A market saturation caused by completion from neighboring gaming destinations could significantly slow down gaming expansion in Macao and result in significant downward variance.

Another very important factor that may cause significant variance in our forecast is the visitors' average length of stay. Both our short-term and long-range forecasts are based on recent visitors' average lengths of stay, which was around 1.35 days at the end of 2007. If the average length of stay increases significantly in the future, then the required casino labor force would increase accordingly. A longer average stay per trip implies more service time provided to each visitor, thus more labor hours and a greater labor force need for the industry. Predicting the future length of stay would be a challenging task. On one hand, the Macao casino industry's efforts in diversification, especially in developing a convention and exhibition business, are likely to increase the average length of stay. On the other hand, the proposed Hong Kong-Macao-Zhuhai Bridge, once built, could significantly cut the traveling time between Hong Kong and Macao and facilitate more day trips rather than overnight stays for visitors from Hong Kong, lowering the overall average length of stay.

Given the variance factors discussed above, our forecasts for the Macao casino industry's future labor force needs, especially the long-range forecasts, can have great variances. Adjustments must be made to account for developments in Macao and in surrounding areas that are unforeseeable at the time of when the forecast was made, thus making the forecasts more useful for policy making on the labor force quantity issue.

5. Recommended solutions

The simplest and easiest solution to the casino labor shortage is to import workers and this has been the case up to now. According to *Macao Daily News* (August 21, 2007), imported workers in Macao reached 75,000 by the end of June 2007 and it is expected that by 2010, the ratio of imported to local workers will reach 1:1. While importing workers is a quick and convenient way for solving labor shortages, excessive reliance on imported labor may cause social tensions and cultural

conflicts between long-time local residents and immigrants. In particular, the large flows of short-term workers in and out Macao could aggravate social and environmental problems such as traffic congestion, crime and pollution that are already being endured by the increasing numbers of gambling tourists. Some Macao scholars have expressed concerns over the increasing proportion of imported labor in Macao (*Macao Daily News*, July 5, 2007) and overly relying on imported labor may not be in the best interests of Macao in the end.

Based on the analysis of future labor force needs, this study would like to propose some alternative ways for the Macao casino industry to solve the labor shortage. First, the severe labor shortage is caused by the extremely rapid growth of the casino industry and therefore, it is necessary for the Macao authorities to reexamine the appropriateness of the speed of the gaming growth. While rapidly growing casino revenues can benefit Macao through greater tax collections, more job opportunities, and higher individual incomes, decision makers must also consider the social costs associated with large numbers of gambling tourists and temporary workers. Another issue that needs to be addressed is the balance between the gaming growth and social resources, such as Macao's human, cultural and environmental resources (particularly land use), to pursue sustainable gaming development. Since Macao is already experiencing severe labor shortages, and the issue will become more serious in the future, this study would suggest that Macao should adopt a controlled gaming development policy. For Macao, a healthy gaming growth is more important than a rapid gaming growth. To implement a controlled gaming growth policy, the Government will not only need to limit the issuance of gaming licenses, but also become involved in the planning of the gaming capacity.

Second, decision makers must have a clear idea about how the Macao casino industry should be diversified. Casino diversification has the benefits of enlarging the casino revenue pool and making the revenues more stable. The downside is that a diversified casino industry requires a lot more workers than a casino industry that only offers gaming. It would be ideal for Macao to become a Las Vegas type destination with well-diversified casino revenues. However, Macao cannot afford to copy the Las Vegas model to reach the same degree of diversification simply because of labor force constraints. The Macao casino industry must make a tough decision regarding how, and to what degree, to diversify the casino business. Considering the labor constraints in Macao, a less diversified casino revenue structure leaning towards gaming revenue dominance is probably a more realistic solution for the coming decade.

Third, high-end or premium play (which is not the same as traditional gambling room or "VIP room" play) operations are less-labor intensive than mass gaming operations. In the past, Macao gross gaming revenue has been mainly derived from gambling-room operations. Given the severe labor shortage, it seems that reforming the traditional gambling-room play to a more regulated and higher value-added premium, or VIP, operation could be appropriate as a dominant sector in the Macao market. In other words, developing a modern and well-regulated VIP

operation business model in Macao casinos may also ease the severity of labor shortage.

Fourth, the Macao casino industry should further increase the weight of slot operations. Making the industry more equipment-intensive will certainly help reduce the reliance on the labor force. Here, high-dimension slots or electronic gaming devices may be an optimal solution. The Macao market has risk-takers as its main clientele (Gu, 2006). High rollers may not be interested in slot play because slot bets are relatively small and thus not as exciting as high limit table games. However, inventing some high-limit slots mimicking baccarat games could be a good solution to ease the labor shortage and provide the thrills for high-risk takers.

Finally, raising the labor productivity of Macao casino employees can help mitigate the labor shortage problem. As revealed earlier, in 2007, the per-employee gross gaming revenue rose significantly to $255,748. While the rising VIP proportion and increasing share of slots in gross gaming revenues are likely contributors to the increasing per-employee gross gaming revenue, various labor-training programs implemented by the Government and the industry should definitely be a plus factor in improving productivity. However, there remains room for further improvement in Macao casino workers. As found by Gu and Siu (2007) in their study on Macao casinos workers' service quality, the overall assessment of customer satisfaction in Macao casinos was below the satisfactory level. The low customer rating of casino employee performance was due to not only poor interpersonal skills such as smile and readiness to help but also technical skills in terms of gaming proficiency and smoothness. To raise labor productivity further, the Macao casino industry should step up employee training to improve the labor force quality in terms of both interpersonal and technical skills. Raising the efficiency and productivity of its labor force is an important way for Macao casinos to cope with the labor shortage.

6. Conclusions

Based on projected gross gaming revenue, workers needed for the Macao casino industry by 2012 would be 62,230, an increase of more than 50% from its 2007 workforce if the industry maintains its current VIP focused and gaming dominated revenue structure. If the industry were to follow the well-diversified Las Vegas model, with gross gaming revenue at 41% of the casino revenues, then the additional casino labor force needed for 2012 would reach 229,990, which is about two thirds of the current labor population in Macao (DSEC, 2007). In a longer period, our prediction shows that by 2017, gaming employees will increase to 77, 245 under a non-diversified scenario and the future of Macao gaming development is facing a tough challenge in labor supply.

To solve the labor shortage and avoid overly relying on imported workers, Macao

must first adopt a controlled or self-constrained gaming growth policy. Here, both the industry's self-discipline and the Government's guidance and involvement would be needed. To cope with labor shortage, it is also advisable for Macao to diversify its casino operations to a lesser degree than the Las Vegas Strip, to maintain a larger portion of high-end and VIP play, and to increase the extent of slot operations. Finally, the quality of the casino labor force should be enhanced not only to raise the customer satisfaction, but also to further increase casino labor efficiency and productivity.

5

Casino Labor Quality Deficiency as Perceived by Customers

1. Importance of labor quality for the Macao casino industry

With many new casinos opening in Macao in recent years and more casinos coming on line in the near future, competition among Macao casinos will inevitably heat up and customer service could become the key to success. Kale (2006) points out that with significant new gaming capacity added to the Macao market, the competition for customers will intensify and casinos will soon find that high levels of quality service and customer satisfaction are critical for retaining customer loyalty and maintaining a competitive advantage. The casino industry is a service industry and high-quality services must be provided by high-quality labor force. According to Kale (2006), to survive and excel in the end, every casino in Macao will have to raise its labor quality in order to strengthen customer service. Companies that are customer-centric and train all of their employees in the basics of customer service will be the market share leaders in Macao. High labor quality guarantees excellent customer service and is thus the key to success for casinos operating in a competitive environment. Commenting on how Native American Indian casinos should deal with growing competition in the US, Baird (2002) indicates that the answer is guest service. For an Indian casino to stand out in the midst of increasing competition, it must have superior customer services provided by a high quality front line labor force. As Edward (2006) argues, the spread of casinos on Native American reservations throughout the US has created the need to provide competitive customer services for the vast niche markets that characterize varying population demographics.

For many years before the opening of Sands Macao in 2004, the Macao gaming market was a monopoly operated by Stanley Ho's gaming company, Sociedade de Turismo Diversões de Macau, SA (STDM). There was no competition. However, in 2002, the Macao SAR Government granted gaming licenses to not only Sociedade de Jogos de Macau, SA (SJM), a wholly owned subsidiary of STDM, but also foreign competitors including Las Vegas based Wynn Resorts and Sands Corp., and

Hong Kong-based Galaxy Casino. In the past, lack of competition in Macao made labor quality a less important issue. Now, with three casino license holders and two sub-license holders rivaling each other for a share of the Macao gaming market, the landscape of Macao casino gaming has completely changed. Raising labor quality to create high customer satisfaction can no longer be neglected and creating casino guest advocates by being nice to customers would be an effective means to win over the patrons (Ellis, June 4, 2007).

Macao casinos are not only competing with each other in Macao. They are facing competitions from casinos in Korea and Malaysia and will soon be confronted with challenges from new Asia gaming destinations such as Singapore and possibly Japan and Taiwan (Gu & Gao, 2006). With the proliferation of legalized casino gaming in the region, providing competitive customer service to attract and retain guests will become an issue of growing importance for Macao casinos.

Customer service is the product of casino employees, especially those front-line employees who directly interact with guests. The quality of customer service in a casino, in the final analysis, is rooted in the quality of its employees. Superior labor quality warrants superior customer service and inferior labor quality leads to inferior customer service. For a Macao casino to outrival its competitors in Macao, and throughout the region, having a quality labor force that can provide superior customer service is of vital importance.

2. Quality deficiency identified by the visitor survey

To identify labor quality deficiency among Macao casino employees, a survey was conducted among 1,022 Macao casino customers when they were departing after their visit to the casinos. A total of 999 survey responses were complete and identified as usable for analysis. The survey questionnaire was composed of 11 questions. The survey questions were selected as relevant to the most important service quality features in casino operations after consultations with casino managers in Macao and Las Vegas. The largest number of usable responses was collected from SJM customers, 48% of all responses, followed by 22% from the Galaxy Casino, 20% from the Sands Casino and 10% from the Wynn Resort.

a) Mean scores of the first nine questions

Table 5-1 presents the summary statistics of the scores obtained from the first nine likert-scale questions as listed below:

Question 1 Do casino employees respect guests?
Question 2 Do employees smile to guests?
Question 3 Do employees greet guests?

Question 4 Do employees take initiative to help customers?
Question 5 Do you find it difficult to communicate with employees?
Question 6 Do dealers ask or hint for tips?
Question 7 Are you satisfied with dealers' dealing skills?
Question 8 How often do dealers make mistakes?
Question 9 What is your overall assessment of the service quality?

Question 9, the indicator of overall satisfaction with the service of casinos visited, has a mean of 3.532 and a mode of 4, suggesting that Macao casino guests' overall evaluation of the service is above mediocre and leans toward the satisfactory level.

Among the other eight questions, the highest score was found with Question 6 or "tip", with the mean at 4.602 and the mode at 5, indicating that Macao dealers seldom ask or hint for tips. The mean scores of Questions 5 and 8 regarding "communication" and "mistake" are also over 4 with modes at 5, suggesting that the employees have few difficulties in communicating with guests and dealers rarely make mistakes. Questions 1 and 7, referring to "respect" and "skill", received relatively lower scores of 3.498 and 3.698, respectively with their modes at 4, implying that the two service features are between mediocre and satisfactory levels. Lowest mean scores and modes are associated with three questions on the humanization aspect of service quality, namely "smile" (Question 2), "greet" (Question 3) and "help" (Question 4). Their means are below 3 and modes are at 3, suggesting that the service quality in terms of the three features is mediocre or worse.

Table 5-1 Summary statistics of survey items

Items	Respect	Smile	Greet	Help	Comm.	Tip	Skill	Mistake	Overall
Mean	3.498	2.771	2.551	2.546	4.304	4.602	3.698	4.361	3.532
Mode	4.000	3.000	3.000	3.000	5.000	5.000	4.000	5.000	4.000
Std. Dev.	0.664	0.988	1.033	1.023	0.914	0.746	0.682	0.704	0.697

Note: Std. Dev. = Standard deviation, Comm. = Communication

Smile, customer greeting and willingness to help needy customers are among the most important interpersonal skills required for casino employees on the Las Vegas Strip. Those three service features not only help make customers feel at home, but can also encourage customer gaming participation, especially for risk-averse players. All casino games are games of chance and involve the risk of losing money for the customers, therefore making the customers feel they are respected, welcomed and being helped can create a friendly gaming environment in which customers would fell less risky, thus increase their ability of taking the monetary risk on the tables or at the slots. It is known that risk-averse players need some motivation to participate in game playing. Casinos providing complimentary services (comps) can motivate risk-averse customers to play games but comps are

costly. Good interpersonal skills of casino employees, especially those of casino dealers, could help soothe players' anxiety at game tables and thus encourage their game participation in a more economical way.

Evidently, the interpersonal skills of smiling to customers, greeting guests and being helpful are a weak link in Macao casinos, as all three questions received mean scores below mediocre. Improving Macao casino employees' ability on these three service features is a more essential issue than raising communication and technical skills for the Macao casino industry.

b) Impact of prior visitation to other destinations

The answers to Question 10 regarding prior visits to other gaming destinations show that among the 999 responses, 219 or 22% had visited casinos in other destinations including Las Vegas, Atlantic City, Australia, Malaysia, Korea, Canada, Russia and France. Table 5-2 provides a comparison of the scores between Group 1, those who had never visited other casino destinations, and Group 2, those who had visited other casino destinations, for the nine likert-scale questions. As can be seen from the table, among the nine service features, only three have significant differences in means scores between the two groups. The mean scores of Group 1 are higher than Group 2 in "respect", "smile", "communication", "tip", "skill", "mistake" and "overall". The t-test results, however, show that only "smile", "tip" and "skill" of Group 1 are significantly higher than Group 2 at the 0.1 or 0.01 levels. It seems that prior visitation to other gaming destinations had only limited impact on the survey scores. Group 2, with prior visitation to other casino destinations, appeared to be more stringent only on scoring "smile", "tip" and "skill". More importantly, the two groups' scores on Question 9, as the t-test indicates, are essentially the same, thus prior experience had no effect on the assessment of overall satisfaction.

Table 5-2 Comparison of scores between two groups based on prior visitation to other casino destinations

Items	Respect	Smile	Greet	Help	Comm.	Tip	Skill	Mistake	Overall
Group 1 (n=780)	3.508	2.803	2.544	2.526	4.305	4.642	3.729	4.379	3.535
Group 2 (n=219)	3.466	2.658	2.575	2.616	4.301	4.457	3.584	4.324	3.521
t-Stat.	0.826	1.922	-0.4	-1.161	0.054	3.271	2.788	1.027	0.264
Sig.	0.204	0.055	0.344	0.123	0.479	0.001	0.003	0.152	0.396

Note: Group 1 never visited other casino destinations before. Group 2 have visited other casino destinations.

c) Answers to the open-end question

For Question 11, which invites comments and suggestions from the participants, 118 or 12% of the 999 survey forms contained comments. Table 5-3 provides a summary of the contents of those comments. The remarks regarding service quality concentrated on "smile", "respect", "greet" and "skill", which is consistent with the relatively lower or mediocre scores on those features (see Table 5-1). Some remarks were about casino's service facilities, such as frequency of bus shuttles, in-door air quality, etc., which indicates these casino guests evaluate customer service not only on employee job performance alone but also on casino facilities.

Table 5-3 Contents summary of answers to the open-end question

	Contents	**No. of comments**
Comments related to employees	Smile	21
	Respect	14
	Greet	13
	Skill	11
	Language	3
	Appearance	2
	Tip	1
Comments related to the casino	Service improvement	11
	Facility improvement	8
Other		31
Total		118

3. Quality difference across different casino firms as perceived by visitors

Table 5-4 compares employee service quality based on mean scores of the first nine questions across casinos operated by the four companies. As can be seen from the table, Wynn ranks the highest in 6 out of the 9 service features, including "respect", "greet", "help", "tip", "mistake" and "overall", and the differences in 4 of those features, namely "respect", "greet", "help" and "overall" are significant at least at the 0.1 level. Wynn's score on "smile" (2.871) is almost the same as that of top-ranked SJM, 2.883. It is necessary to point out that 152 or 32% of the 478 SJM responses were collected from SJM's newest Grand Lisboa casino right after its grand opening in early February 2007, and it is possible the effect of the "grand opening" will have helped raise SJM's "smile" score above that of Wynn. Among the four gaming companies, Wynn's overall better performance in terms of customer service is obvious.

For overall customer satisfaction (Question 9), Wynn stands at the top with a mean score of 3.743, followed by SJM at 3.527 and Sands Casino with 3.525. Galaxy ranks at the bottom with a mean of 3.45. The ANOVA test, with its F-value of 4.141, indicates that overall satisfaction is significantly different across the four firms at the 0.01 level. Evidently, in terms of customer satisfaction, SJM, Sands and Galaxy in particular, need to catch up with Wynn.

Table 5-4 Cross-company mean score comparison and ANOVA test

Company	N	Respect	Smile	Greet	Help	Comm.	Tip	Skill	Mistake	Overall
SJM	478	3.521	2.883	2.634	2.586	4.201	4.584	3.669	4.387	3.527
Galaxy	220	3.405	2.627	2.427	2.414	4.227	4.632	3.773	4.386	3.450
Sands	200	3.500	2.610	2.390	2.485	4.655	4.540	3.680	4.270	3.525
Wynn	101	3.594	2.871	2.743	2.762	4.267	4.743	3.703	4.426	3.743
F-Value		2.359	5.791	4.911	3.236	12.880	1.874	1.207	1.689	4.141
Sig.		0.070	0.001	0.002	0.022	0.000	0.132	0.306	0.168	0.006

The highest F-value of the ANOVA test is associated with "communication", indicating that the differences in this feature across the firms are significant at the 0.000 level. Here, Sands stands out as the best performer with a mean score of 4.655, followed by Wynn at 4.267. SJM ranked the lowest, with a mean of 4.201.

The ANOVA test shows that the four casino companies are different in three other features, namely "smile", "greet" and "help" at the 0.05 level. In terms of "smile", SJM and Wynn scored significantly higher than Galaxy and Sands. In terms of "greet" and "help", Wynn scored the highest, followed by SJM while Galaxy and Sands again fell behind both Wynn and SJM. In the table, while all firms' scores on "smile", greet" and "help" are below 3, indicating less than mediocre levels on the three features, those of Sands and Galaxy are even worse. Indeed, Galaxy and Sands need to make extra efforts to improve on these three features in order to compete with SJM and Wynn.

With a mean score of 3.594, Wynn also stands out as the best in terms of "respect". The F-value of the ANVOA test indicates that the differences among the means of "respect" across the four firms are significant at the 0.1 level. The F-values of the ANOVA test on other three features, namely "tip", "skill" and "mistake", show that differences in the three features among the four firms are not statistically significant, thus all four firms performed equally well in those aspects.

4. Contributing factors to the quality deficiency from the visitor survey

a) Correlations between overall satisfaction and other features

To examine how the overall customer satisfaction may be related to other service features, this study computed the coefficients of correlation between the overall satisfaction (Question 9) and each of the other features (Questions 1 to 8). Table 5-5 provides the computed coefficients of correlation. The coefficients of correlation between each of the eight features and the overall satisfaction are all positive and highly significant (at the 0.000 level), with "respect" showing the closest correlation with the overall satisfaction. Therefore, all eight features are likely to be significant and positive contributors to the overall customer satisfaction.

Table 5-5 Coefficient of correlation of service features with overall assessment

Items	Respect	Smile	Greet	Help	Comm.	Tip	Skill	Mistake
Correlation Coefficient	0.544	0.465	0.416	0.383	0.199	0.244	0.355	0.212
Sig. (1-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

b) Estimated Regression Model

To examine further, how the eight service features may have contributed to the overall customer satisfaction, a regression model was estimated using stepwise backward selection procedure (Stevens, 1986). Here, overall satisfaction was the dependent variable and the other eight service features were the candidate independent variables. As prior visitation to other gaming destinations was found to have no impact on overall satisfaction, there was no need to control for the effect of prior visitation in the modeling.

The resulting model confirms what has been implied by the coefficients of correlation between the eight features and the overall satisfaction. Table 5-6 demonstrates the results of the stepwise regression. All the eight service feature variables were retained by the regression procedure. The t-statistics indicate that all variables are significant at least at the 0.05 level in explaining the overall customer satisfaction. In the regression model, all the tolerance values are substantially higher than the cutoff value of 0.1 and all the VIF values are significantly lower than the cutoff value of 10, suggesting that multicollinearity between explanatory variables should not be a problem for our model (Kleinbaum et al., 1988). The F-value of the estimated model, at 93.159, indicates that the model is highly significant and the adjusted R-square of 0.425 implies that about 43% of the variation in overall customer satisfaction has been explained or predicted by the eight feature variables jointly.

Table 5-6 Results of backward stepwise regression

Items	Standardized coefficient	t	Significance	Tolerance	VIF
Constant		1.377	0.169		
Comm.	0.057	2.241	0.025	0.876	1.142
Mistake	0.065	2.332	0.020	0.740	1.351
Help	0.084	2.591	0.010	0.553	1.809
Tip	0.116	4.366	0.000	0.818	1.222
Greeting	0.128	3.784	0.000	0.503	1.989
Skill	0.155	5.728	0.000	0.792	1.263
Smile	0.158	5.078	0.000	0.597	1.676
Respect	0.298	9.935	0.000	0.639	1.566

Note: Adjusted $R^2 = 0.425$, Model F = 93.159, Model significant at the 0.000 level

5. How to improve service quality

a) Ways for service quality improvement suggested by the model

The estimated regression model sheds light on how Macao casinos may improve their service quality. Table 5-6 presents the standardized coefficients of the independent variables to show their relative importance in explaining the dependent variable or the overall customer satisfaction. The standardized coefficient shows how important each independent variable is in predicting the dependent variable compared with other independent variables in the model (Grimm & Yarnold, 1995).

Our model shows that Macao casino guests attach the greatest importance to "respect" when evaluating the overall service quality of casinos, with its standardized coefficient almost double those of the next two variables (see Table 5-6). The importance of "respect" in customer satisfaction is also confirmed by the fact that Wynn, which ranks at the top in overall satisfaction, also has the highest "respect" score among the four companies. Macao casino goers seem to be not very satisfied with the respect shown to them. In Table 5-1, for all Macao casinos, "respect" has a mean score of 3.498 and a mode of 4. In other words, the respect shown to guest was perceived as between mediocre and satisfactory. Macao casinos need to educate their employees to show more respect to guests because of its importance in overall customer satisfaction.

In their answers to Question 11, several respondents commented that employees tend to show more respect to winning guests than to losing guests. This issue certainly needs to be raised and corrected when casinos conduct employee trainings. "Respect" is the biggest contributor to customer satisfaction and therefore the most important weapon for a casino to win over clientele. In

particular, Galaxy, which was the lowest on "respect" and "overall" (see Table 5-2) could significantly improve its "overall" customer satisfaction by enhancing the "respect" feature.

With a standardized coefficient at 0.158, "smile" is the second most important contributor to the overall customer satisfaction. "Smile" has a below mediocre score of 2.771 in Table 5-1 and is one of the weakest spots of the Macao casino labor force. Training employees to smile properly could substantially increase customer satisfaction. As reported by *Harvard Business Review* (2007), in the hospitality industry, the bigger the employee's smile, the more likely a customer would view him or her as competent and the happier the customer. The report further indicates that the employer and manager should not mandate smiles. Instead, they should create an environment that encourages genuine smiles by making employees happy. For Macao casinos, a harmonious employer/employee relationship would certainly help generating genuine employee smiles and happy employees are likely to create happy customers.

As indicated by its standardized coefficient in Table 5-6, casino dealers' "skill" is almost as important as "smile" in creating customer satisfaction, however Table 5-1 shows that "skill", with a mean of 3.698, is slightly below satisfactory level. Some respondents indicated in answers to Question 11 that they desire better proficiency and smoothness in game handling. Therefore, Macao casinos should keep training their dealers to make them more skillful and proficient in dealing games.

In Table 5-6, "greet", "tip" and "help" rank in the middle of the eight service features in their importance to overall customer satisfaction. Here, more attention should be paid to "greet" and "help" since they are also the weak links in customers service as indicted by their below mediocre scores (see Table 5-1). Wynn's better position in overall customer satisfaction was attributable, at least partly, to its better performance in the two features. Being nice to customers is the way to create customer advocates and increase the market share (Ellis, June 4, 2007). Indifference to customers was a major inadequacy indicated by respondents in their answers to the open-end question. Teaching employees to greet guests, be friendly and help needy customers without being asked should greatly enhance the customer satisfaction and help the casino gain a competitive advantage.

Communication has the lowest standardized coefficient in the table, yet it is still a significant factor in creating customer satisfaction. Communication has a high mean score of 4.304 (see Table 5-1), indicating an above satisfactory status. This probably can be attributed to two factors. First, the Macao SAR Government has been encouraging residents to study Mandarin, which helps minimize the language barrier between casino employees and Mandarin-speaking Chinese visitors. Second, the majority of casino players in Macao are from Hong Kong and Canton Province of China where people speak the same Cantonese dialect as spoken by Macao residents. However, employees' English proficiency could become a more challenging issue when the number of international visitors increases after the new

mega casino resorts open in the future. To prepare for the increase in international visitors, Macao casinos may need to add English teaching in their training programs.

It must be pointed out that some service quality issues are culture related and their solution may involve a cultural adaptation process on the part of the labor force. Table 5-1 shows that "smile," "greet" and "help" received lower than mediocre scores and the lower ratings on those features may be attributed to, at least partly, the culture. As opposed to Westerners, who are generally more extroverted, Asians are usually less outgoing. As Yu (1999) points out, minimal eye contact is typical of the cultural norm in East Asia and people tend to control their facial expression to a remarkable degree. East Asians are always reluctant to display their true emotions. The introversion and reserve deeply rooted in the East Asia culture may have kept Macao casino employees from smiling, greeting and helping needy customers proactively. To improve these service features, a change in the cultural mentality on the part of Macao casino employees is needed and that change may take time to happen. One thing Macao casinos could do to facilitate the change is to bring in casino workers from Las Vegas as role models. During its grand opening in late 2006, Wynn Macao had a large team of dealers and floor persons from Las Vegas to assist in its operation and training and Wynn's higher scores on "smile", "greet" and help" are likely due to its more effective training. Mingling Las Vegas casino workers with Macao casino employees in the workplace can provide a good opportunity for the latter to learn from the former and help establish a new customer-oriented mindset among Macao casino workers, thus lifting the service quality up to the Las Vegas standard. Wynn's "smile", "greet" and "help" approach should be followed by the other Macao casinos and practiced on a regular basis, rather than just at grand openings.

Cultural differences between Macao and Las Vegas casinos may also affect attitudes toward tipping. Previously, when Macao's gaming industry was under the monopoly of STDM, asking for tips by dealers was a common phenomenon and both casino employees and players were used to it. The old habits and traditions of Macao casinos are unlikely to change overnight with the openings of casinos operated by foreign operators. While requesting tips in Las Vegas casinos is generally unacceptable, it may be more tolerated in Macao. The high mean score on "tip" in the survey does not necessarily mean that Macao casinos need not to do anything about requesting tips. As shown in our regression model, "tip" negatively affects the customer overall satisfaction, therefore Macao casinos still need to teach their dealers to refrain from asking for tips.

b) Implications of the customer survey study

The findings of this study bear several important implications for the labor force of the Macao casino industry. First, the overall assessment of customer satisfaction was above mediocre but below satisfactory level, indicating there remains room for improvement in the job performance of the labor force as perceived by casino patrons.

Macao casinos should enhance their labor force quality from both technical and humanization aspects to raise overall customer satisfaction.

Second, there were significant differences in employee performance across casino firms. Among the four gaming companies in Macao, Wynn stood out in terms of respecting customers, smiling to clients, greeting and helping guests, and overall customer satisfaction. Therefore, Wynn could be regarded as the benchmark for other gaming companies when they work to improve their labor force quality in serving the customers.

Third, although numerous technical training seminars have been conducted to train and retrain dealers under the sponsorship of the Government and the industry, technical skill remains a labor force quality issue. Customer evaluation of dealers' skill was below satisfactory. Dealer skill is an important variable in our regression model and was only next to "respect" and "smile" in terms of contribution to customer overall satisfaction. While guests are satisfied with dealers' game handling accuracy, better gaming smoothness and proficiency are still desired. Here, providing constant and continuous on-the-job training could be more helpful than training seminars. Having experienced dealers giving on-the-job guidance to newly hired coworkers could help new dealers build job confidence and proficiency more effectively than holding a training seminar. This could raise the new dealers overall gaming smoothness and proficiency quickly.

Finally, interpersonal features, such as respecting guests, greeting customers, smiling and being willing to help customers, are important service attributes needing to be strengthened among the labor force. The deficiency in those interpersonal service attributes appears more severe than in technical skills. Respect in particular is the most important service attribute to make customers satisfied.

The Macao casino industry must step up the interpersonal skills training of its labor force, especially customer engaging frontline employees, to enhance those service attributes. Here, a customer-above-all philosophy, or culture, must be established across the industry. It is important for casinos to teach employees interpersonal skills regarding how to respect, greet, help and properly interact with customers. However, without a customer-centric mindset, it would be hard for employees to learn and apply those interpersonal skills in their daily work. A customer-oriented culture must be the foundation of labor training programs aimed at improving the interpersonal skills of the labor force.

6. Conclusions

Macao is now the number one casino gaming destination in the world in terms of gross gaming revenue. However, it still has a long way to go before it can become the top gaming destination in terms of service quality. This study has found quality inadequacies in Macao's casino labor force from both technical and

humanization perspectives. Many of the service features, especially those related to interpersonal skills were below satisfactory level.

Customer service is the product of the casino employees and a first-class labor force is necessary if the casino is to provide first-class customer service. For the Macao casino industry to meet the challenges from emerging gaming destinations in Asia and to remain the top gaming destination in the world, it should not only solve the labor force shortage but also more importantly, strengthen its labor quality.

The landscape of the Macao gaming market is changing rapidly due to more new mega casino resorts, including The Venetian Macao-Hotel-Resort, MGM Grand Macau and City of Dreams, all of which are scheduled to open over the next several years. The growing saturation in the Macao gaming market, along with rising competition and more demanding guests, is likely to pose tougher challenges in terms of customer service and labor force performance for Macao casinos in the years to come. Therefore, it would be worthwhile to conduct a similar study after a few years to examine the changes in the service quality of casino labor force over time. Such a study would enable Macao casino operators and policy makers to evaluate what progress has been made, and what new have arisen in casino human resources. This will then provide guidance for Macao to further improve its casino labor force quality and increase its long-term competitiveness among the competing casino destinations in the region.

6

Quality Deficiency as Perceived by Macao Casino Employees

1. Sample employee backgrounds

Among the 892 participants in the sample, 472 or 52.9% were male and 420 or 47.1% were female, closely matching the male/female composition of 53.4% versus 46.6% of the Macao labor force at the end of 2006 as reported by the DSEC of the Macao SAR Government (2006). The surveyed casino employees were classified into four age groups corresponding to the age grouping by DSEC (2006). Casino workers appeared to be significantly younger than the overall labor force in Macao. Among the survey participants, those between 18 and 25 years of age constituted a dominant 55.8% of the sample, while in comparison the entire Macao labor force had only 13.2% of its members below 25 (DSEC, 2006). On the other hand, those who were 45 or older were only 4.9% of the sample, much less than the same age group's 35.2% in the Macao labor force (DSEC, 2006).

By education, senior high school graduates were the largest group with 56.2% in the sample, followed by junior school diploma holders at 29.5%, college degree achievers with 11% and those with primary school or no school education, 3.3%. In comparison, in the entire Macao labor force, the above four categories constituted 24.4%, 30.1%, 17.7% and 27.8%, respectively (DSEC, 2006). It seems that senior high school graduates 25 years of age or younger were the core of Macao's gaming labor force.

In terms of job positions, the majority, 55.4%, in the sample were casino dealers, followed by floor persons and pit bosses, 17.7%. 71.5% of the surveyed casino employees had not participated in any training programs. By company affiliation, 41.8% were employees from Sociedade de Jogos de Macau, SA (SJM, which was the largest group, 41.8%, followed by the Venetian Macao's Sands Casino, 22.5%, Wynn Resort Macao, 17.4% and the Galaxy Casino at 14.5%. The affiliation distribution in the sample approximated the four companies' 2006 gross gaming revenue share.

Casino work experiences ranged from zero (new hire) to 41 years. The

average casino work experience was 3.7 years, but more than half (56.1%) of those surveyed had no more than two years of experience in the industry. Table 6-1 and Table 6-2 below provide a summary of the background statistics for the surveyed Macao casino employees.

Table 6-1 Background statistics for Macao casino employee sample

	Count	**Sample %**
Gender		
Male	472	52.9
Female	420	47.1
Age		
18-25	498	55.8
26-35	246	27.6
36-45	104	11.7
Over 45	44	4.9
Education		
Primary school	30	3.3
Middle school	263	29.5
High school	501	56.2
College and higher	98	11
Job position		
Managerial positions[a]	158	17.7
Dealer	494	55.4
Slot attendant	42	4.7
Security	23	2.6
Other non-managerial positions[b]	113	12.6
Training program participated		
Yes	254	28.5
No	638	71.5
Company affiliation		
SJM	373	41.8
Galaxy	129	14.5
Sands	201	22.5
Wynn	155	17.4
Unidentified	34	3.8
Total	892	100

Note: a. Including supervisor, pit boss, shift manager, etc.
b. Including cashier, cage person, slot technician, guest service clerk, maid, etc.

Table 6-2 Work experience (years) of sample casino employees

Mean	3.696
Median	2
Mode	1
Standard deviation	5.036
Minimum	0
Maximum	41

2. Job skills and dealer ethics

Casino employees' self-assessment on job skills and work ethics was derived from answers to Questions 7 to 16 as listed below:

Question 7 How fluent is your Mandarin?
Question 8 How difficult is it for you to communicate with Mandarin-speaking customers?
Question 9 Do you know any foreign language(s) (specify)?
Question 10 How often do you smile to guests?
Question 11 How often do you greet guests?
Question 12 How often do you take initiative to help guests?
Question 13 How often do you ask or hint for tips?
Question 14 How often do you make gaming mistakes?
Question 15 How many casino games can you operate?
Question 16 How skillful are you with the games you operate?

Table 6-3 presents the summary of the results on the 10 survey questions. In Table 6-3, the mean (3.395) of "Mandarin fluency" indicates that Mandarin fluency, as perceived by casino employees, was just above mediocre but less than fluent. However, "difficulty in communications" shows that casino employees' Mandarin proficiency did not hinder their communication with Mandarin-speaking visitors. This supports our previous finding from the customer survey on the similar question: "Do you feel difficult in communicating with employees?" The mean score given by the casino goers was 4.305. Its high mean of 4.357 and median of 5 in our employee survey demonstrate that Macao casino employees generally had few problems in communicating with guests and at least half of them encountered no communication difficulty at all. Regarding foreign language knowledge (see footnote of the table), more than half (53.4%) of the respondents knew one or more foreign languages and just half (50.6%) knew English.

Table 6-3 Job skills and dealer ethics assessment

Items	Mandarin fluency	Difficulty in comm.	Smile	Greet	Help	Mistake	Tip	No. of games	Gaming skill
Mean	3.395	4.357	3.269	3.279	3.289	3.689	3.955	2.803	4.028
Median	3.000	5.000	3.000	3.000	3.000	4.000	4.000	2.000	4.000
Std. Dev.	0.919	0.802	0.976	1.033	0.986	0.793	1.071	1.629	0.735

Note: Knowledge of foreign language(s) is not included in the table. It was treated as a dummy variable with "0" indicating knowing no foreign language(s) and "1" indicating knowing at least one foreign language. In the sample, 476 or 53.4% of the 892 casino employees knew at least one foreign language and 451 or 50.6% knew English.

With respect to the three interpersonal skills, namely "smile", "greet" and "help" in the table, the mean and median values suggest that Macao casino employees perceived them to be between mediocre and satisfactory but leaning toward mediocre. In other words, casino employees sometimes, rather than often, smiled to patrons, greeted customers and assisted needy guests. The self-assessed scores on the three interpersonal skills are lower than the scores on communication skills and technical skills. In our customer survey, mean scores on the three items were also lower than for communication and technical skills. Therefore, Macao casino employees, like their customers, consider their interpersonal skills as the weaker link in their job performance. However, in contrast with the scores given in the customer surveys, Macao casino employees scored their performance on the three items higher on the likert scale. Employee mean values were 3.269, 3.279 and 3.289 for "smile", "greet" and "help", respectively, as compared with the mean values of 2.771, 2.551 and 2.546 on the same items in the customer survey (see Table 5-1 in Chapter 5). While casino employees perceive their performance as between mediocre and satisfactory, casino goers consider the same three items to be worse than mediocre. The difference in the scoring on "smile", "greet" and help" shows that there exists a significant perception gap between Macao casino visitors and casino employees on employee performance on the three service features.

Regarding the dealer ethics on tip requesting ("tip" in Table 6-1), the high mean of 3.955 and median values of 4.000 shows that casino dealers seldom asked or hinted for tips. It seems that tip requesting is no longer as much of a common practice among Macao dealers as it used to be. The score given by casino customers in the customer survey was even higher with a mean of 4.602 and a median of 5.000. It is possible that customers may be somewhat insensitive to tip hints from dealers and failed to understand the request. Dealers' technical skills, represented by "mistake" and "gaming skill" in the table, scored higher than interpersonal skills. The mean of 3.689 and median of 4 of "mistake" indicate that gaming errors occur at a frequency between "sometimes" and "seldom" but leaning toward "seldom". In our customer survey, the mean and median for the same question were 4.361 and 5.000, much better then what the employees think about themselves. It is possible that some gaming mistakes will have occurred

undetected by players, thus causing higher customer score on the issue.

In terms of gaming skills, the mean and median are 4.028 and 4.000, suggesting that Macao casino dealers were quite satisfied with their technical skills. However, the mean score on gaming skill given in customer survey of 3.698 was a little lower than the employee self-assessment, suggesting that customers are less satisfied with dealers' gaming skill than dealers feel about themselves. Answers to Question 16 on number of games shows that an average Macao casino dealer could handle 2.8 games but about half could operate no more than two games.

3. Job satisfaction and morale

Table 6-4 summarizes findings on job satisfaction and employee morale based on Questions 17 through 23 as listed below:

Question 17 How satisfied are you with your casino?
Question 18 How satisfied are you with your salary and benefits?
Question 19 How often do you receive support, encouragement, guidance and help from your superiors and coworkers?
Question 20 Is the job training provided by your casino helpful?
Question 21 Do you have job-related stress?
Question 22 Do you intend to transfer to another casino?
Question 23 Do you intend to quit working in the casino industry?

Table 6-4 Job satisfaction and morale assessment

Items	Overall satisfaction	Salary & benefits	Support	Training	Stress	Transfer	Quit
Mean	3.121	2.992	2.889	3.034	2.664	2.387	1.770
Median	3.000	3.000	3.000	3.000	3.000	2.000	1.000
Std. Dev.	0.856	0.882	1.139	0.935	0.983	1.156	0.978

The mean and median of "overall satisfaction", "salary & benefits", "support" and "training", derived from answers to Questions 17 through 20, are 3 or close to 3, implying that the employee's satisfaction on those items was just at a mediocre level. For Questions 21 to 23 regarding job-related stress and morale, the five-point likert scale was used in a different manner with smaller values indicating levels that are more desirable. In Table 6-4, "stress" has a mean of 2.664 and a median of 3, implying a between "mild" and "average" level of job-related stress. The intent to transfer to another casino or quit the casino industry was quite low. The low mean of 2.387 and median at 2.000 of "transfer" indicate that the intent to transfer to a different casino leans toward "very weak". The intention of quitting the casino

industry is even lower with a mean of 1.77 and a median of 1, implying very weak intent or no desire to quit the industry. In the first quarter of 2007, the median monthly employee earnings of the casino industry was MOP10,901, ranking third among ten industry sectors and it was 44% higher than the median earnings of all Macao employees (DSEC, 2007). Lee et al. (2006) uncovered job compensation's significant influence on job satisfaction and organizational commitment and the casino industry's higher personal earnings may be a driving force for employees to stay with it.

4. Cross-company comparisons

a) Job skills and ethics across the four companies

Cross comparisons for the casino employee's self-assigned scores on job skills and performance were made for each of the four casino companies. Table 6-5 presents the results of the comparison. With regard to language ability, the F-values of the ANOVA tests for "Mandarin fluency" and "communication" ("Comm.") are both greater than 0.05, indicating that differences in Mandarin proficiency and communication ability, if any, are not significant at the 0.05 level. In terms of employees' knowledge of foreign languages, however, the differences were highly significant. While SJM has the dummy variable's mean value at less than 0.5, implying that less than half of its employees know foreign languages, the other three firms have their means greater than 0.5 with Wynn standing out with a mean of 0.6903, suggesting that about 70% of its employees know English or another foreign language.

Table 6-5 Cross-company comparison of Job skills and ethics self-assessment

Company	Mandarin fluency	Comm.	Know foreign language	Smile	Greet	Help	Error	Tip	No. of games	Skillful
SJM	3.389	4.340	0.389	3.177	3.290	3.214	3.796	3.836	2.297	4.036
Galaxy	3.295	4.357	0.581	3.101	3.015	3.140	3.388	3.814	2.906	3.891
Sands	3.323	4.285	0.637	3.353	3.294	3.328	3.552	3.672	3.827	4.092
Wynn	3.542	4.426	0.690	3.465	3.452	3.477	3.845	4.690	3.209	4.134
F-value	2.242	0.898	20.048	5.004	4.357	3.710	12.763	34.845	25.318	1.419
Sig.	0.082	0.441	0.000	0.002	0.005	0.011	0.000	0.000	0.000	0.236

The F-values of the ANOVA tests for "smile", "greet" and "help" indicate that significant differences exist, at least at the 0.05 level, among employees of the four casino firms. The rankings of the mean scores of the three interpersonal skills are

consistent among the four casino firms, with Wynn ranked at the top and Sands the second, followed by SJM as the third and Galaxy on the bottom. Evidently, Las Vegas-based casino companies have a competitive advantage in terms of the three important service skills as perceived by employees themselves.

For the tip requesting practice, Wynn again stands out at the top with a mean of 4.690, implying a frequency close to never happening. For the other three casino firms, the mean values on the same issue were between 3 and 4, implying a more frequent occurrence between "sometimes" and "seldom". The F-value of the ANOVA test on tip quest is 0.000, indicating that the differences in this practice across the firms are highly significant measured by their means scores.

Wynn also ranks at the top in terms of game errors. Under "error" in Table 6-5, Wynn has the highest mean score, followed by SJM, Sands and Galaxy. The F-value of the ANOVA test suggests that the differences in the mean scores of the firms are statistically significant at the 0.000 level. While Wynn's highest score of 3.845 implies that gaming mistakes occur at the casino more likely at a "seldom" level, Galaxy's lowest score of 3.388 suggests an occurrence leaning towards "sometimes". Table 6-5 also shows that there are significant differences in number of games that dealers can handle across the four casino companies. Here, Sands ranked at the top with an average of 3.827 games, followed by Wynn at 3.209, and Galaxy at 2.906. SJM is at the bottom with 2.297 games. However, in terms of gaming skillfulness there are no significant differences among the four casino companies, as shown by the F-value of 0.236 that indicates a significance level at only 0.082.

b) Job satisfaction and morale across the four companies

Answers to Questions 17 to 23 were also compared across the four casino companies. Table 6-6 presents the mean scores of the investigated items for each of the four companies and the F-values and significance levels of the ANOVA tests. As can be seen from the table, in terms of overall employee satisfaction (see "satisfied"), the differences across firms are highly significant at the 0.000 level with Wynn ranked at the top, followed by Sands and SJM. Galaxy was at the bottom and fell behind Wynn by almost one likert point. Salaries and benefits have identical rankings (see "benefits") and the differences in mean scores are at the same high significance level. Regarding internal employee relationship (see "support"), Wynn is again the lead, followed by Sands and Galaxy. SJM is at the bottom and the differences across firms are again highly significant at the 0.000 level. On training opportunities provided for employees (see "training"), significant differences also exist among the four firms. Here, Wynn is almost on a par with SJM at the top while Sands stands slightly below and Galaxy falls far behind.

Table 6-6 Cross-company comparison of job satisfaction and morale

Company	Satisfied	Benefits	Support	Training	Stress	Transfer	Quit
SJM	3.032	2.887	2.777	3.139	2.668	2.263	1.708
Galaxy	2.636	2.605	2.791	2.690	2.558	3.171	2.031
Sands	3.234	3.129	2.896	3.000	2.547	2.254	1.751
Wynn	3.587	3.434	3.239	3.138	2.792	2.252	1.748
F-value	35.043	27.293	6.669	8.329	2.257	24.510	3.712
Sig.	0.000	0.000	0.000	0.000	0.080	0.000	0.011

With respect to job-related stress (see "stress"), the F-value of the ANOVA test indicates that differences are not significant at the 0.05 level. Therefore, differences in job-related stress across firms, if any, are negligible. The mean values of "transfer" across the four casino companies are significantly different at the 0.000 level. As indicated by the mean scores, employees at the Wynn appear to have the lowest intent to transfer, followed by Sands and SJM employees. Galaxy employees had the highest intention of transferring. Galaxy's mean score on "transfer", 3.171, suggests an above-average intention to transfer. The other three firms have mean scores slightly higher than 2, indicating a weak transfer intent. Regarding intention to quit from the casino industry, cross-firm differences are also significant at the 0.05 level. Here, employees at SJM show the lowest intention to quit, followed by those of Wynn and Sands. The intention to quit among Galaxy employees was again the highest.

Among the six surveyed items that show significant cross-firm differences, namely "satisfied", "benefits", "support", "training", "transfer" and "quit", Wynn ranked at the top in all items except "quit". Sands was second to Wynn in four out of the six items ("satisfied", "benefits", "support" and "transfer"). Our findings indicate that US-based casino companies, Wynn and Sands, outperformed locally based SJM and Galaxy in terms of employee satisfaction and morale. In particular, Galaxy underperformed the rest in all the seven items except "support" and "stress". The gap between the US and local casino companies in making employees happy is obvious.

5. Employee overall satisfaction as related to performance and morale

To investigate how job satisfaction may be associated with job performance, the correlations between employees' overall satisfaction and job performance, which includes job skills and morale, were examined. The computed coefficients of correlation indicate that there is a significant association between job satisfaction and job performance. Table 6-7 presents the coefficients of correlation and their t-statistics and significance levels. As the table shows, the nine job skill variables,

namely "Mandarin fluency", "difficulty in comm." (communication), "foreign language", "smile", "greet", "help", "mistake", "No. of games" and "gaming skill" are all positively correlated with employee overall satisfaction at the 0.05 or less levels except "difficulty in comm." and "No. of Game". The positive and significant coefficients suggests that in a casino environment with higher job satisfaction, employees tend to have better Mandarin and foreign language ability, to greet and smile to guests and help needy customers more frequently, to have fewer gaming mistakes, and to have better gaming skills.

Furthermore, the highly significant and positive correlation between job satisfaction and the ethics variable "tip" suggests that higher job satisfaction makes tip requests less likely to occur. The two morale indicators, "transfer" and "quit" are both negatively and significantly correlated with employee overall satisfaction, confirming that high job satisfaction helps enhance employee loyalty and lower employee turnover. Our results support Lee et al.'s (2006) argument that employee satisfaction adds to the human assets quality of a firm by not only ensuring customer service quality but also enhancing employee retention and commitment. The findings are also consistent with Karl and Peluchette's (2006) results that satisfied employees believed that their organization could provide customer service that was reliable, responsive, and empathetic, and that employees were knowledgeable and able to instill confidence in customers.

Table 6-7 Correlations between employee overall satisfaction and performance and morale

Items	Coefficient of correlation with job satisfaction	t-value	Sig. (1-tailed)
Mandarin fluency	0.094	2.811	0.005
Difficulty in comm.	0.056	1.681	0.093
Foreign language	0.127	3.884	0.000
Smile	0.128	3.891	0.000
Greet	0.118	3.550	0.000
Help	0.115	3.452	0.001
Mistake	0.165	3.717	0.000
Tip	0.287	6.646	0.000
No. of games	0.039	0.860	0.390
Gaming skill	0.095	2.111	0.035
Transfer	-0.405	-13.227	0.000
Quit	-0.243	-7.469	0.000

6. Drivers behind employee overall satisfaction

To determine drivers behind job satisfaction in Macao casinos, "overall satisfaction" was treated as the dependent variable and salaries and benefits, support, encouragement, guidance and help from supervisors and coworkers, training opportunities, and job-related stress, plus a group background factors, were used as potential independent variables to estimate a regression model. The backward stepwise regression resulted in a model with five significant variables including "salary & benefits", "training", "support" and two control variables, "age" and "year". In Table 6-8, the five variables are listed according to the size of their standardized coefficients. Grimm and Yarnold (1995) point out that standardized coefficients place all variables in the same measurement units, with means of 0 and standard deviations of 1, so that the independent contribution of each coefficient to the prediction or explanation can be identified and compared. Evidently, in the model, "salary & benefits" is the most important satisfaction driver, followed by "training" and "support". The t-statistics associated with the three variables, at the 0.000 level, indicate that they are the more significant determinants than the two control variables, "age" and "year", which are significant at the 0.01 and 0.05 levels, respectively.

Table 6-8 Results of backward stepwise regression

Items	Standardized coefficient	t	Significance	Tolerance	VIF
Constant	0	7.998	0.000		
Year	-0.076	-2.129	0.033	0.566	1.768
Age	0.106	2.929	0.003	0.548	1.824
Support	0.129	4.423	0.000	0.857	1.167
Training	0.148	5.306	0.000	0.931	1.074
Salary & benefits	0.483	16.782	0.000	0.875	1.143

Note: Adjusted R^2 = 0.354, Model F = 98.733 (P = 0.000)

For independent variables in the model, the tolerance values are all greater than 0.1 and the variance-inflating factor (VIF) are all less than 10, indicating that multicollinearity among independent variables is not a problem for the model (Kleinbaum, Kupper & Muller, 1988). The F-value (98.733) indicates that the model is statistically significant at the 0.000 level and the adjusted R-square value of the model, 0.354, implies that about 35% of the variation in employee overall satisfaction has been explained, or predicted, by the five-variable model.

The 35% explanatory power of the model, though relatively low, is still satisfactory because in practice, employees' job satisfaction is affected by many other physical factors as presented in a particular working environment. These include smoking area vs. non-smoking area, clientele such as mass-market

operation vs. VIP-room operation, etc., as well as personal factors such as religion and previous job, family size, etc. Given limited interview time, it was impossible to make the interview exhaustive to include all those.

In our model, salaries and benefits are obviously the most important contributors to employee satisfaction in Macao casinos. The positive coefficient of "salary & benefits" is more than three times that of "training" and "support". Better salaries and benefits can surely lead to greater job satisfaction. The *HR Focus* (2007) reported that salaries and benefits were ranked equally as the most important ingredients of job satisfaction and Lee et al. (2006) found that service reward had a significant influence on employee job satisfaction. The dominant importance of the "salary & benefits" variable in the model confirms what was found by previous studies.

In our model, "training" is the next most important variable contributing to employee overall satisfaction. Harel and Tzafrir (1999) found training as the single significant independent variable in affecting perceived organizational performance. Lee et al. (2006) confirmed, "training is positively associated with services providers' job satisfaction and organizational commitment" (p. 256). The significant and positive impact of training on Macao casino employees' job satisfaction found in this study provides additional empirical evidence on the importance of training. Investing in employee development or training is a critical part of customer service improvement strategy. Innovative and dynamic approaches in behavioural training, including teaching employees how greet, smile to and help guests can equip casino employees with the necessary skills to provide proper service to fulfill every customer needs. Training programs can improve the quality of a casino's workforce and provide a clear competitive advantage over competitors.

The internal employee relationship, or the support, encouragement, guidance and help from superiors and coworkers, is represented by the "support" variable in the model. It was the third major drivers of Macao casinos' employee satisfaction. Indeed, support, encouragement, guidance and assistance provided to each other among casino employees can help create a harmonious work environment that makes people working there happy. Our finding supports the claim by the *HR Focus* (2007) that job satisfaction of service employees is affected by such elements as communication between employees and senior management, relationship with immediate supervisor, and management recognition of employee job.

Though contributing less to the employee overall satisfaction, the two control variables, namely "age" and "year" deserve our attention. "Age" is positively correlated with job satisfaction, suggesting that younger employees are less likely to be satisfied with the firm. On the other hand, "year" has a negative coefficient, implying that job satisfaction may decrease overtime during the employee's stay with the firm. In our sample, 55.8% of the casino employees were 18 to 25 years of age, indicating the dominance of young people in the casino labor force. Therefore, determining how to make young employees satisfied with and loyal to their employer will be a big long-term challenge for Macao casinos.

7. Implications and suggestions for Macao casino employers

The findings of this survey-based study carry important implications for the Macao casino industry regarding how to improve its labor force quality. First, our study has found that the quality deficiency of Macao's casino labors is reflected more in interpersonal rather than technical skills. Scores on interpersonal skills were lower than scores on technical and gaming skills. Therefore, employee training should place greater emphasis on interpersonal skills, including teaching employees how to help, greet and smile to guests. Here, cultivating a customer-above-all mindset among casino employees is extremely important. Only with a customer-centered philosophy established in his mind, can a casino worker make guests feel at home.

Second, language ability is critical because it affects both interpersonal and technical skills. Although Macao casino employees' Mandarin was not found to be hindering communication with guests, a less than fluent Mandarin proficiency, as perceived by casino employees themselves, is inadequate for Macao to embrace the fast growing Mainland Chinese market. To feed its increasing gaming capacity, Macao needs to expand its Mainland Chinese market from China's coastal regions, including Cantonese-speaking Guangdong Province, into inland regions. With more inland Chinese cities to be approved for Individual Visit Scheme (IVS), which allows Chinese citizens to visit Hong Kong and Macao individually, more inland Chinese tourists, who speak Mandarin with various accents, will visit Macao. A Mandarin proficiency that is less than fluent would be insufficient for Macao to accommodate rising numbers of inland Chinese. Efforts should be made to further improve Macao casino employees' Mandarin fluency and Mandarin instruction should remain an important component of casino employee training.

At present, Macao is a regional gaming destination with 98.14% of visitors coming from Mainland China, Hong Kong and Taiwan (DSEC, 2006). Being a regional casino destination accommodating mainly Chinese players, Macao for now may not feel an urgent need to raise the employees' English ability. However, if Macao is to diversify its markets by attracting more foreigners and makes itself an international destination like Las Vegas, only half of its employees (50.6%) knowing English is not sufficient. Furthermore, with more US company-operated casinos opening in Macao, more English-speaking casino managers and supervisors will be hired from abroad. Raising the English ability of local employees would be necessary for facilitating the communication among employees, especially between dealers and supervisors, in a more internationalized workplace. Good communication increases the mutual understanding between workers and the management, thus helping enhance employee job satisfaction, performance and service quality.

Third, the significant gap in job performance and job satisfaction between US based casino firms and locally owned and operated casinos reveals that the former

has a clear advantage in terms of labor force quality. Especially, US based Wynn Resort was ranked at the top in almost all job performance and job satisfaction items in our survey. The presence of US casino firms in Macao may pose a threat to the local casino firms but is also a good opportunity for the latter to improve themselves. Local casino firms should not only pay attention to how to compete with foreign rivals, but also and more importantly, learn from their foreign competitors in terms of how to treat their customers and employees. For local casino firms, lifting their labor force quality up to the standard of their foreign competitors would contribute greatly to the improvement of the overall labor force quality of the entire Macao casino industry.

Finally, casino employee overall satisfaction was found significantly correlated with job skills and employee morale. Job satisfaction backs up labor performance and is thus an inseparable part of the labor quality issue in Macao. Our regression model shows that salaries and benefits are the most important contributor to job satisfaction. In today's Macao gaming market where casino firms are facing heated competition for qualified labors, offering attractive salaries and benefits is necessary for recruiting and retaining high-quality worker. However, overly depending on salaries and benefits to sustain job satisfaction may not be the best strategy. Excessive salaries and benefits will further cut into the operation profits of Macao casinos that are subject to one of the highest gaming taxes rate (40%) in the world. For Macao casino hotels, a better alternative may be relying more on the other two significant drivers of job satisfaction, namely "training" and "support", to boost employee job satisfaction.

In this regard, on-the-job training, or the training provided by experienced employees and management to new hires or inexperienced workers in the workplace, may be an optimal approach. As indicted earlier, 56.1% of the employees in the sample had no more than two years of casino work experience therefore having experienced coworkers and supervisors train new hires in the workplace can improve the new hire employee job skills on a continuous basis. In the meantime, the support, help, guidance and encouragement conveyed to the new hires during the on-the-job training process will certainly help build up a harmonious internal relationship between workers and management and among all other staff. On-the-job training would take care of both "training" and "support" factors in our job satisfaction regression model, thus having the "one stone, two birds" effect on creating better employee satisfaction.

Providing on-the-job training to update and broaden employee skills is a common practice in Las Vegas casino hotels. Las Vegas casinos frequently conduct in-house English language training seminars for dealers whose native languages are not English. Floor persons are often engaged in worksite training to catch up with new developments in games. Las Vegas casinos are good examples for Macao casinos to step up their on-the-job training. Another approach that Macao may learn from Las Vegas is to encourage employees' career development by sponsoring their participation in external education programs. Many Las Vegas casino hotels

pay tuitions for their employees to pursue college degrees. While the financial support can indeed increase employee job satisfaction and loyalty, it is also a good long-term investment in the enhancement of workforce and service quality.

Our sample indicates that 71.5% of the surveyed employees had never participated in any training programs and that 55.8%, or the majority of casino workers were 25 years of age or younger. The regression model implies that younger employees are less likely to be satisfied with the firm but training can help increase employee satisfaction. Therefore, there is indeed a need for Macao casino hotels to step up training to improve job performance and maintain employees' satisfaction. Macao casinos should promote on-the-job training not only as a means to improve job skills and service quality but also as a corporate culture to enhance job satisfaction and increase employee loyalty.

8. Conclusions

To become a top casino gaming destination in the world, Macao needs not only to generate top gaming revenue but also to provide top customer services. Customer services are produced by casino employees and are thus backed up by the quality of the labor force. To provide its visitors with first-class gaming experiences, Macao must have a first-class quality labor force.

Many things need to be done to improve Macao's labor force quality; but the priority is to improve employees' interpersonal skills to strengthen the humanization aspect of Macao casinos' customer services. Furthermore, employees' language ability should be enhanced for both Mandarin fluency and English knowledge so that Macao can meet the demand of an expanding Mainland Chinese market and the need for becoming a more diversified market and a more internationalized workplace. Finally, Macao casinos should increase on-the-job training as a mechanism not only to improve employee job skills but also to boost job satisfaction and employee morale.

7

Impacts of Gaming Human Resources Deficiency on the Sustainable Growth of the Macao Economy

1. An overview of the key issues

Based on the findings as presented in the previous three chapters, a human resources deficiency in both quality and quantity is an undeniable situation in the casino sector. The deficiency, however, is not simply an issue faced by the casino sector itself. Indeed, the consequences have extended to other sectors of the local economy. Despite the remarkable number of jobs available to the local workforce and the increasing growth in wages offered for certain casino positions, a number of hindrances to the sustainable growth of the Macao economy, coupled with possible negative feedbacks to the casino sector, continue to exist.

First, recent expansion in the demand for gaming labor has brought about an obvious disequilibrium/distortion in the local labor markets. For example, as the casinos offered high wages to attract and compete for qualified labor the traditional low value-added sectors of the local labor markets, including manufacturing, small and medium service businesses, etc., encountered tremendous pressure to improve their efficiency, or reform their businesses to live with these rapid changes in the local, regional and global economic environment.

In addition, both direct and indirect effects driven by the rapid growth of the casino sector, and the increasing demand for imported labor, have evidently deteriorated social harmony of Macao society. Macao's local population, which is not identical to "resident population" as reported in official statistics, is less than half million and of low education on average. Owing to this fact, protectionism prevents the community from fairly evaluating/judging the real contribution of imported labor to the development of the Macao economy and accordingly

constructing an effective public policy scheme regarding imported labor.

Finally yet importantly, in consideration of the consequences, which have existed in Macao's labor market for a long period, the dealing with the aforementioned labor issues is probably not a simple project that could be undertaken by the independent effort of any single entity such as Macao industry, the community, or the government. It is also anticipated that the labor issues will constantly challenge any endeavor to sustain the growth of the casino sector and the Macao economy as a whole.

2. Impacts on labor costs in the local job market

Unlike the wage structure of most other jobs, total income package ordinarily given to a dealer working in a casino composes of two major portions: base salary offered by the employer and tips given by the patrons. In principle, base salary is a form of direct labor cost to the casino and a fixed amount received by the employees. However, tips are not part of the casino's labor cost and are a variable amount determined by such factors as volume and flow of customers during a given period of time, service quality appreciation, as well as the general feelings of the casino customers.

Just before termination of the casino monopoly in 2002, it was reported that monthly base salary for a dealer at entry level was MOP4,000, and after a dealer gained a certain period of experience, say one year, the base salary would be raised to MOP5,000. In addition, the dealers tips (known as "tea money" in Chinese) were generally about MOP9,000 or above per month. Moreover, a remuneration of MOP1,333 was paid by the casino to compensate dealers who were asked to work on the four legal holidays each month. Accordingly, total amount earned by an experienced dealer in 2002 was about MOP16,000 (*Macao Daily News*, November 12, 2004, p. B6).

When the US casino operators opened their casinos in Macao in their study of the salary structure resulted in a completely different handling of dealer tips. To a large extent "tips" in Macao were an involuntary payment enforced by dealers on patrons. For example, at the end of the 1990s, it was reported in the Macao and Hong Kong press that dealers always took the lead to keep a portion of chips, often 5% to 10%, from winning players on a single table game as "tea money", irrespective of any players' reluctance or refusal to pay. However, this kind of practice was uncommon, and in some cases illegal in North America and Australia. To offer a competitive monetary package for attracting potential casino employees, the new Sands Casino and Galaxy Waldo offered the same base salary of MOP5,000, along with a form of "guaranteed" tips ranged from MOP8,000 to MOP9,000 (ibid) to gaming employees, in exchange for their agreement of not to charge patrons "tea money".

When this happened, and in order to compete with the new casinos in rendering quality service, the local operator then also deprived their dealers of the rights to enforce "tea money" . Nevertheless, in a different from the North American markets, the willingness of patrons to pay tips in Macao casinos was relatively low. Accordingly, under the new salary structure, direct labor costs to casinos increased, because the casinos had to make up the differences between guaranteed tips and tips actually received.

In addition, to compete for qualified gaming personnel from existing casinos and to attract potential job switchers from other local businesses, non-monetary benefits such as one holiday per week and medical benefits were included in the employment packages of the new casinos. Consequently, real labor costs to casinos increased despite the general fall in direct monetary income received by casino employees in 2004 and 2005 (see Table 7-1). A major reason was the elimination of the MOP1,333 payments, representing extra compensation for holiday work that were previously stipulated. Indeed, improved non-monetary benefits and working environment offered by the new casinos have implicitly imposed higher labor costs on other local business sectors for retaining or recruiting qualified employees.

As an increasing number of new large casinos were ready to open in 2006, competition between casinos for gaming human resources, especially dealers, because in principle they must be Macao residents, significantly pushed up the basic salaries and this helps to explain the changes in salary between local employee and foreign employees as depicted in Table 7-1. In absolute terms, the average monthly salaries earned by foreign employees were higher than local employees were because a large portion of these employees were hired for the management positions. However, between the last quarter of 2005 and the last quarter of 2007 the actual rate of change for local employees increased by 38%, while the rate fell by 11% for foreign employees. For example, as a strategy to retain and compete for gaming human resources, SJM announced a 30% increase in base salary, plus an annual bonus to its employees in April 2006 (*Macao Daily News*, April 6, 2006), a few months prior to the opening of Wynn Resorts and Star World. This started the war between the casinos for human resources by boosting up staff remuneration packages.

In response to the competition for human resources that started in the casino sector, salaries offered in other sectors were also pushed up. In Table 7-2, it is observed that the increase in median monthly salary to the economy as a whole ("total") was largely driven by "cultural, recreational, gambling and other services" (the casino sector) and "construction", most of the time from 2002 to 2007. On average, the annual growth rate of salaries in these two sectors was higher than the "total". Indeed, rapid increases in the construction workers' salaries doubled them between 2002 and 2008, together with the higher rates of growth as compared with the casino sector in 2003, 2005 and 2006 respectively, were all related to catching up with the progress of the casino sector. Shortly after the announcement of three new concessionaries in 2002, accompanied by the

sub-concessions from 2003 and the subsequent years, construction works embarked on various new casino projects, which sharply elevated the demand for construction workers.

Table 7-1 Average monthly salary of full-time staff employed in the gaming sector

Time	All employee	Local employee	Foreign employee
2004q2	10,881	10,031	20,105
2004q4	10,730	9,870	20,174
2005q2	10,931	9,936	23,178
2005q4	11,269	10,252	23,921
2006q2	12,615	11,367	25,880
2006q4	13,978	12,874	26,002
2007q2	14,491	13,565	21,959
2007q4	14,899	14,159	23,092

Source: DSEC. "Survey on Manpower Needs and Wages – Gaming Industry." http://www.dsec.gov.mo/index.asp?src=/english/html/e_employment.html.

Table 7-2 Median monthly employment earnings and annual rate of growth by industry

Median monthly employment earnings by industry	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Total	4,672	4,801	5,167	5,773	6,701	7,800
Manufacturing	2,758	2,834	2,983	3,101	3,140	4,000
Electricity, gas and water supply	12,648	11,010	11,546	12,969	13,417	14,100
Construction	4,145	4,593	4,967	5,922	7,521	8,500
Wholesale and retail	4,430	4,355	4,550	4,888	5,576	6,000
Hotels and restaurants	4,054	4,074	4,272	4,468	4,885	5,500
Transport, storage and communications	5,851	5,802	5,958	6,455	6,924	7,800
Financial services	7,923	8,588	8,159	8,691	8,825	9,800
Real estate and business activities	3,731	3,700	3,712	4,198	4,675	5,500
Public Administration and social security	13,745	14,019	13,895	14,521	14,793	14,900
Cultural, recreational, gambling and other services	5,965	6,466	7,080	7,837	9,537	11,600
Annual growth rate in the median monthly employment earnings by industry		**2003** %	**2004** %	**2005** %	**2006** %	**2007** %
Total		2.8	7.6%	11.7	16.1	16.4
Manufacturing		2.8	5.3	4.0	1.3	27.4
Electricity, gas and water supply		-13.0	4.9	12.3	3.5	5.1
Construction		10.8	8.1	19.2	27.0	13.0
Wholesale and retail		-1.7	4.5	7.4	14.1	7.6
Hotels and restaurants		0.5	4.9	4.6	9.3	12.6
Transport, storage and communications		-0.8	2.7	8.3	7.3	12.7

(cont.)

Financial services	8.4	-5.0	6.5	1.5	11.0
Real estate and business activities	-0.8	0.3	13.1	11.4	17.6
Public Administration and social security	2.0	-0.9	4.5	1.9	0.7
Cultural, recreational, gambling and other services	8.4	9.5	10.7	21.7	21.6

Source: DSEC. "Labour and Employment – Median monthly employment earnings by industry." http://www.dsec.gov.mo/index.asp?src=/english/indicator/e_ie_indicator.html.

Since 2006 when most of the new casinos opened or entered into the pre-opening stage, the trend of rising salaries in other sectors noticeably accelerated. For example, median monthly salary for workers employed by the "wholesale and retail" sector rose by 14.1% in 2006 and 7.6% in 2007. Additionally, salaries for those employed in the service sectors as "hotels and restaurants", "transport" and even "financial services" increased over 10% in 2007. In addition, as "manufacturing" was largely composed of traditional low value-added SMEs, the general salary level had long been set below other sectors and here there was a 27.4% increase in salaries in 2007, which represented the highest rate of change among all sectors. Indeed, all of these salary increases were driven by the need to secure enough workforces for normal operations and retain qualified labor. Most local firms were "made" to raise the monetary compensation to their labors by benchmarking the casino sector (evidences and related discussions will be presented in Section 4 below). Unfortunately, the increasing labor costs in different sectors do not necessarily come with an increase in real productivity.

3. Conflicts derived from the hiring of imported labor

Owing to a number of complicated and interdependent historical, social, political and economic factors, imported labor has long been an indispensible and controversial topic in Macao's labor market. Since 2004, issues associated with imported labor have been getting increasingly contentious. As depicted in Table 7-3 (extended from Table 2-2), by including imported labor, the size of Macao's resident population took over a decade to increase from 400,000 in the second quarter of the 1990s to 450,000 in 2004. However, following the remarkable expansion in the size of imported labor, it took just another 2 years from 2005 to 2006 for Macao's population to add another 50,000 people.

At the end of 2007, Macao's population was close to 540,000. Indeed, 66% of the increase in population from the end of 2003 to the end of 2007 was from imported labor. Since 2004, annual rates of growth of the local population, excluding imported labor, were significantly lower than the rates of change in the reported population. For example, if imported labor was excluded from the measurement, the annual growth rates in Macao's local population were 0.86% and

0.93%, instead of 6.01% and 4.81% respectively in 2006 and 2007. Besides, the local population was only slightly more than 450,000 by the end of 2007, instead of the reported 538,100. Because of the situation that imported labor as a percentage of total population increased dramatically from 5.33% in 2002 to 15.83% in 2007, social and economic conflicts between the two groups became evident.

Table 7-3 Relationship between the total number of local resident and imported labor

Year	**Total number of resident** (including imported labor) **(1)**	**Annual growth rate of (1)** %	**Total number of imported labor (2)**	**Total number of resident** (excluding imported labor) **(3) = (1)-(2)**	**Annual growth rate of (3)** %	**(2)/(1)** %
1995	415,000		35,286	379,714		8.50
1996	415,200	0.05	29,900	385,300	1.47	7.20
1997	419,400	1.01	29,723	389,677	1.14	7.09
1998	425,200	1.38	32,013	393,187	0.90	7.53
1999	429,600	1.03	32,183	397,417	1.08	7.49
2000	431,500	0.44	27,221	404,279	1.73	6.31
2001	436,300	1.11	25,925	410,375	1.51	5.94
2002	440,500	0.96	23,460	417,040	1.62	5.33
2003	446,700	1.41	24,970	421,730	1.12	5.59
2004	462,600	3.56	27,736	434,864	3.11	6.00
2005	484,300	4.69	39,411	444,889	2.31	8.14
2006	513,400	6.01	64,673	448,727	0.86	12.60
2007	538,100	4.81	85,207	452,893	0.93	15.83

Source: DSEC. "Demographic – Estimates of population, birth and mortality, marriage and divorce." http://www.dsec.gov.mo/index.asp?src=/english/indicator/e_dem_indicator.html.

Data of: DSEC. "Demographic Statistics – Annual – 7. Non-resident workers." Data from 2000 to 2007 could be obtained from http://www.dsec.gov.mo/index.asp?src=/english/html/e_demgraphic.html.

In Table 7-4, conflicts arising from the increasing size of imported labor to the local community are further revealed in terms of its impact to the local labor market. Since imported labor is included in the formal statistics of a country/region's working population, the absolute size of the denominator is inflated when unemployment rate is measured. It is clear that from 2002 to 2007 when the unemployment rate reported a 50% drop (from 6.3% to 3.1%), the actual unemployed force lowered by only 30% (from 13,700 to 9,500). If the local unemployment rate is re-measured by excluding the imported labor, the result is then much higher (see the last column in Table 7-4). At the end of 2007 for example, although the reported rate of unemployment was 3.1%, it was underestimated by 1.1% if this rate was applied to only the local working force only.

Table 7-4 Relationship between imported labor and unemployment rate

Year	**Total number of working population** (including imported labor) **(1)**	**Total number of imported labor (2)**	**Total number of unemployed population (3)**	**(3)/(1)** %	**(3)/[(1)-(2)]** %
1995	187,100	35,286	6,700	3.6	4.4
1996	202,400	29,900	8,600	4.2	5.0
1997	202,300	29,723	6,500	3.2	3.8
1998	206,000	32,013	9,500	4.6	5.5
1999	209,400	32,183	13,200	6.3	7.4
2000	209,500	27,221	14,200	6.8	7.8
2001	219,000	25,925	14,000	6.4	7.3
2002	218,600	23,460	13,700	6.3	7.0
2003	218,500	24,970	13,100	6.0	6.8
2004	230,300	27,736	11,200	4.9	5.5
2005	247,700	39,411	10,300	4.2	4.9
2006	275,500	64,673	10,400	3.8	4.9
2007	309,800	85,207	9,500	3.1	4.2

Source: Data of working population and unemployed population are obtained from DSEC. "Labour and Employment – Labour force, employed population and unemployed population by sex." http://www.dsec.gov.mo/index.asp?src=/english/indicator/e_ie_indicator.html.

Data of: DSEC. "*Demographic Statistics* – Annual – 7. Non-resident workers." Data from 2000 to 2007 could be obtained from http://www.dsec.gov.mo/index.asp?src=/english/html/e_demgraphic.html.

Concisely, data cited in Table 2-3 and Table 2-4, and analyses shown in Table 7-1 and Table 7-2 uncover the key motives behind the increasing protectionism with the local community in combating imported labor, irrespective of the constant drop in the reported unemployment rate since 2003. Consequently, "the *habitual* forces which have been developed at various stages (an argument as stated in Section 1 of Chapter 2)" in the labor markets before and after the restructuring of the casino sector may indeed hamper the real growth of the economy as a whole.

4. Human resource constraints on the re-development and diversification of the local economy

To any one economy, sustainable growth relies on many factors. In principle, appropriate development/re-development and diversification of various local sectors are necessary conditions for long-term enhancement of the economic well-being of a local community. To achieve this end, quantity and quality of human

resources are indispensible elements (as shown in Figure 1-1). According to the human resources constraint as uncovered in Macao, it is clear that the interactions between the gaming and non-gaming sectors in the battle for the very thin human resources have brought about adverse impacts to the sustainable growth of the local economy. Parallel to the rapid expansion of the gaming sector, related human resources issues have evidently depressed the needed re-development of the traditional local sectors, as well as the diversification of the local economy. Indeed, this was a common market expectation following the Macao SAR Government's resolution of promoting the status of gaming to a "dragon-head industry" by granting three new casino licenses in 2002.

Since 2005, issues brought about by the labor market to the operations of the local sectors, especially SMEs in hospitality businesses, are widely publicized in various local Chinese language newsletters. For example, because of labor shortage, there were rising complaints launched in respect of deterioration of service quality offered by local restaurants, traditional small-scale hotels (Jornal do Cidadão, September 18, 2006, p. 1). Furthermore, owing to the serious labor shortages, a local well-known restaurant announced in September 2006 that it would shorten its opening hours, and the statement cited in the local newsletter as motive behind this decision was:

"Our restaurant is facing severe human resources problem, there is a serious shortage in labor for running operation. To maintain service quality of our restaurant, we have no choice but shorten the operation hours. ....." (translated from Jornal do Cidadão, September 18, 2006, p. 1).

In addition, development/re-development of the local hotel sector was also hard hit by the human resource deficiency originated from the gaming sector. As reported by a local hotel, 11 out of its total of 16 front desk and lobby employees tendered resignation in a month in 2006 (ibid). It was found that a 40/50 year old female employee working in a sizable casino resort to tidy up hotel rooms, could earn MOP7,000 to MOP8,000. This was definitely a huge challenge to local hotels in retaining their staff as they had been paying only between MOP5,000 and MOP 6,000 for the same position.

Moreover, along with the global and regional trend in business, particularly in finance and banking to offer a five-day work week, the Macao banking sector formally announced implementation of five-day policy with effect from July 2006 (*Macao Daily News*, May 17, 2006, p. A10). While anticipated, the timetable arrived earlier than that of general market expectation. Nevertheless, it was understandable that for the financial and banking sector to safeguard an appropriate quantity of qualified labor to run normal operations, shorter working hours were the most feasible and direct non-monetary means to compete with the rising salary and attractive working environment as provided by the new casinos. With the implementation of the five-day workweek, pressure to increase monetary compensations to employees for the banking sector could possibly be alleviated. This is found consistent with evidence as presented in Table 7-2 as the median

monthly salary for "financial services" increased slightly by only 1.5% in 2006. However, following another round of increases in casino salaries in 2006, where they rose by 21.7% from 2005 and further increase of 21.6% in 2007, an 11% increase in the "financial services" median salary was reported in 2007.

Because of the above facts (additional can be found in the local newsletters), redevelopment of Macao's traditional economic sectors is evidently restricted by the casino human resources deficiency. Moreover, expected progress in diversifying the local economy into a modern and high value-added hospitality sector, mainly including tourism, and Meetings, Incentives, Conference and Exhibitions (MICE) is also hindered. Apart from the shortage in quantity and quality of human resources, rapid increases in labor costs undoubtedly also hold back the industries' desire to promote Macao's tourism, and construct the MICE sector as the key measure to diversify the Macao economy. In principle, as tourism is a highly competitive global industry and the MICE is an infant industry to Macao, human resources constraints clearly represented blockages to their future growths.

5. Some ongoing puzzles

Given the facts as earlier mentioned, it seems an impossible task for various parties in Macao to devise a simple and general plan to overcome the human resources deficiency issues for both the gaming and non-gaming sectors in the coming decade. In principle, human resources are a form of capital stock to an economy, which could hardly be expanded in quantity and simultaneously elevated in quality within a short period. While shortage in quantity could be lessened by importing labor from the outside world, the quality deficiency of the local working population could only be alleviated by long-term investment in forms of education and training. This must include efforts made to erode the community's emotional tradition and ideology, which in institutional economics, is part of the ceremonial value (Bush, 1987, pp. 1079-1080) accumulated in a community to resist real (effective) changes and depress the problem-solving capacity of an economy. In view of the situation of Macao, elevating the quality of its local working population is undoubtedly a major challenge in the future.

On the other hand, it seems that imported labor is an inevitable measure to meet the excessive demand for labor because of the rapid expansion of the casino sector in this new millennium. However, owing to the administrative drawbacks in formulating and enforcing the related labor policies before the establishment of the Macao SAR Government, conflicts arose in the community and generated opposition forces against the use of imported labor. For example, owing to imported labor policies ineffectively implemented in the 1990s, illegal labor became a common issue, which invoked a strong sentiment of opposition against imported labor from the Macao community. Although the Macao SAR Government had made

a series of attempts in the past few years to detect and arrest illegal labor, the prevailing problem remained.

Despite the administrative problems associated with the current debates over imported labor, an economic factor should not be overlooked. Analyzing from the economic angle, the fundamental concept of demand and supply must be examined with due care. In principle, demand and supply refer to the "willingness and ability" to sell and buy in the markets. In a competitive market where a firm's primary consideration is profit, its recruitment policy should not solely consider willingness of an applicant, but also their ability to meet the firm's business objectives. From the community's point of view however, willingness is often taken as the dominant factor of consideration, which in an extreme case, are translated by the opponents of imported labor as willingness equivalent to ability. Accordingly, how to overcome the puzzle proactively will definitely provide another challenge to Macao's policy makers in the coming decade.

8

Remedial Measures for the Human Resources Deficiency

1. Education and training through private and public programs

Largely, the human resources deficiency issues as revealed from the current statistics and the two surveys conducted for this study could be traced to the poor education of the average local working population, and inadequate pre-recruitment and on-the-job training for front-line workers. Consequently, long-term efficiency and occupational mobility of Macao's local working population are contained.

a) Introduction of comprehensive on-the-job training programs

To resolve the quality deficiency of the existing gaming human resources, well-designed and industry-driven training programs of various forms must be urgently promoted as a short-term measure. Industry's involvement in designing the curricula is an absolute need to ensure that the content of these programs will improve the efficiency of the workers on the one hand, while at the same time raising the workers personal profiles hence increasing their occupational mobility. To carry out the programs efficiently, government's efforts in coordination of the programs between industry and related local schools are definitely required. These include arrangements regarding length of various programs, class sizes and schedules, monitoring the financial aspects of the programs, including plans for splitting the costs of those programs between the industries, the government and the students, accreditation of the programs, etc.. In addition, an effective evaluation system supported by public policies must be in place, to ensure that the education system is able to differentiate between people who "complete a program" and those who "complete a program and possess the required capabilities".

Moreover, given the traditional low incentive in the local working population to invest in education and training, the government may have to take the lead to mandate casinos to conduct continuous on-the-job training to employees. By

promoting on-the-job training programs to the local working population, quality and efficiency of the gaming human resources are likely to improve over time.

b) Opening of vocational training schools

In the coming decade, a significant number of low-income families will have children who may require vocational training programs instead of traditional senior secondary education after completing their form 3, or grade 9 junior secondary educations. Because of this, and the quantity shortage in labor, it is advisable that the government seriously considers opening various vocational training schools in the coming few years. This proposal is indeed in line with some recent opinion raised by certain educational parties in Macao (*Macao Daily News*, January 13, 2007, p. B08). It is reported that out of the existing 40 high schools in Macao, only two (i.e., 5%) declare themselves to be vocational training schools. In mainland China however, 50% of the existing high schools are categorized as vocational training schools (ibid). In congruence with the Macao SAR Government's intention to diversify the traditional casino sector into high value-added casino resorts, tourism and MICE, demand for related front-line labor will require a much larger number of vocational training programs.

c) Review and enhance the quality of the existing general and secondary education system

In the end, re-development of a high quality and well-structured general, or foundation, and junior and senior secondary education system is undoubtedly a key measure to sustain quality and maintain the competitiveness of Macao's human resources. To succeed in general and secondary education, the syllabus should not deliver merely routine knowledge from textbooks to students. Apart from the traditional functions, diffusion of new instrumental or technological is of value to the new generation, to strengthen their problem-solving ability (Bush, 1987, pp. 1080, 1087-1088, 1101-1103) in a rapid changing social and economic environment, and is an essential function of schooling to modify the ideology of a local community.

In economics, investment in education will lead to positive externalities. Nevertheless, high-quality education programs could be so costly that they may not necessarily be affordable by every member in the society, especially minorities who may perform at the same level as or even better after receiving education than more affluent members of the society. Accordingly, an effective mechanism allowing split of the education costs between private parties (direct benefit from education) and public sector (external benefit of education to the society as whole), will certainty improve efficiency of resources being deployed to an education system. Yet, government's involvement in education system should never distort its screening function, nor generate adverse effect to the community's incentive,

misled by the belief of a "free lunch" or "special government protection" or "disparate treatment". In Macao, although the reported number of secondary school graduates is increasing since the establishment of the Macao SAR, the quality of the average graduates is disappointing to teachers and employers.

d) Enhancing the university gaming major program to provide the gaming industry with more Macao-based qualified managers is of crucial importance.

Those managers with a university degree are equipped with modern gaming management knowledge and skills. Their local cultural and social backgrounds can also make gaming employees training more effective and efficient, thus playing a crucial role in raising the quality of Macao gaming workforce.

2. Short-term and long-term strategic planning for use of imported labor

The statistics quoted in Table 7-4 showed that at the end of 2007, the total number of imported labor was 85,207, while the size of unemployed was 9,500. Therefore, based on the discussion on human resources deficiency as covered in various parts of this study, it is clear that imported labor is, and will continuously be, an indispensible part of Macao's labor market. Although there have been many criticisms from minority groups, including the unemployed, under-unemployed and the low-paid, the economic contribution of imported labor in narrowing the gap in Macao's labor shortage is undeniable. Considering the anticipated growth of the casino industry in the coming 5 to 10 years such as the projects to be completed in Cotai, and the development of various service sectors, including tourism and MICE, it is foreseeable that imported labor may not be reduced significantly, but rather, keep increasing in aggregate number in the coming years. Otherwise, real growth and competitiveness of the casino industry and other related economic sectors may be adversely affected.

Analyzing from the angle of sustainable growth and long-term economic welfare of the local community, short-term and long-term strategic planning for imported labor are missing parts in Macao's labor policies, which must be studied carefully and scientifically by the Macao SAR Government without further delay. In principle, the economic concepts of demand and supply should be followed when the government and the public are assessing the related issues. Nevertheless, the quality deficiency of the local working population, and the situation that the imported labor does bring about illegal labor and adverse effects to the income of the local workforce, as a result of the drawbacks associated with the content and enforcement of the imported labor policies. Therefore, the force formed by the general discontent towards the government should be taken into account during the

process of reviewing and formulating the related policies in the coming years.[1]

a) Short-term planning

Short-term strategic planning for imported labor is needed to tackle the gaming human resources deficiency problems as presented in different individual stages of the casino industry development, as well as their consequences in other sectors. As an administrative authority and the public policy maker of the society, the Macao SAR Government should be able to obtain most, if not all, leading information about the progress of the casino industry one to two years ahead of implementation. For example, the size of various casino projects require approved by the Government before they can be launched, therefore any quantity and quality deficiencies in human resources, that may require use of imported labor by the gaming and non-gaming sectors, could be anticipated reasonably by the related government departments.

Strategically, short-term imported labor policies must be formulated in such a way that urgent and real demand from the industries for sufficient quantity and quality of labor are met, so that proper operations and services quality of their business are assured. To avoid misunderstanding from the local community, an effective and efficient role should be taken by the labor department, to attend to requests from industries and reconcile these, where possible, with the unemployed and the potential job switchers in the local working population in the first place, followed then by approval on the quotas for imported labor. In addition, transparency in the criteria and the approval process should maintained all the time.

Moreover, to prevent firms from abusing and manipulating the imported labor policies, the government should monitor closely that: i) total cost paid by a firm for importing labor will not be lower than if the same position is offered to local people; ii) where local people are available and qualified for a position, contract of the imported labor should not be renewed; and, iii) imported labor will not be employed in a position other than the one as stated in the original application submitted by the firm. In view of the drawbacks and ambiguities associated with the existing imported labor policies, as well as the traditional ineffectiveness in enforcing the related regulations, strengthening the credibility of the labor department is definitely a pre-requisite, and a big challenge for the Macao SAR Government.

b) Long-term planning

One interesting policy issue observed in Macao's gaming human resources is the consensus between the casinos and the government in not allowing imported

[1] Recent debates over imported labor are a complicated and normative issue to the Macao community. This study is not going to enter into detailed discussion on this topic; rather this study will present some important economic issues relating to consideration of industrial competitiveness and sustainable growth.

labor to take up dealer positions. This was a reasonable arrangement when the three new concessionaries were granted in February 2002. According to the anticipated scale of business as proposed by the three concessionaries, reservation of certain good-pay jobs (requiring only simple and mechanical training instead of formal education) to the low-income group was an arrangement welcome by Macao society. However, following the approvals of the three sub-concessionaries and other joint-venture properties since the end of 2002, the unexpected boom in the casino sector led to an extraordinarily high demand for casino dealers, which represented a major force responsible for the issues as discussed in Section 2 of Chapter 7. Consequently, owing to serious shortage in dealers, the reservation of dealer positions for Macao local people turned out to be restricting their opportunities to transfer to other junior and senior positions in the casinos. Besides, this policy may even lead to potential structural unemployment in the Macao economy should the casino business consolidate or slow down in the future. This illustrates a good example showing absence of long-term planning and policies for human resources development.

To upgrade the quality of the local working population by providing them with better job opportunities, it is an important assignment for the Macao SAR Government to review carefully whether imported labor could fill dealer positions in the future. However, there must be a long-term and comprehensive human resources planning, rather than simply requiring the casinos to promote a certain number of existing dealers to junior managerial positions (e.g., pit managers or dealer inspectors, etc.), and then use imported labor to fill up the vacant dealer positions.

Aside from the demand for front-line workers, elevating the quality and professional level of human resources for both gaming and non-gaming sectors also call for long-term strategic planning for imported labor. It is difficult to develop well-educated and experienced human resources within a short period (e.g., 4- to 6-year higher education and over 10 or longer years of relevant experiences). Therefore, it has been a common practice and strategy followed by competitive and small-populated economies such as Singapore and Hong Kong, to open doors for imported labor to accelerate development of key industries. To reinforce the competitiveness of Macao's casino industry, and development of the MICE, long-term strategic planning is needed to attract foreign labor with related professional education and/or experiences with the talents and skills, to sustain the competitive advantage of Macao's casino sector, as well as assist in development of other prospective hospitality businesses.

3. Effective tax policies for the casino and non-casino sectors

To reinforce both industries and individuals need for a constant upgrade in human resources quality, tax policies could be considered as an incentive measure

to bring training programs into existence as suggested in the first section of this chapter. As illustrated in Chapter 6, continuously, on-the-job training either organized directly or supported indirectly by firms for their employees, could be an effective measure to improve their job satisfaction, and elevating the firms' competitive edge through provision of better quality service to the patrons (i.e., cultivation of customer royalty). In terms of upfront monetary outlay and payback period however, it could be a costly decision to a firm to provide good and well-structured on-the-job training programs of various forms (both general and topical) to its employees. Therefore, the government should subsidize this decision by introducing favorable tax policies.

Owing to the high effective tax rate of around 40% currently imposed on casinos' gross gaming revenue, it is reasonable and possible to consider giving certain tax concessions. For example, allowing tax deduction on costs (capped at a certain upper limit) incurred for upgrading local human resources quality (not only for the casinos' routine operation, but also for the future good sake of improving service quality or promotion of non-gaming business such as recreation and MICE as a whole). For enforcement and monitoring purposes, related higher education organizations in Macao and neighboring regions should be involved in gauging the soundness of training programs (including objectives, content and related costs) coordinated by the casinos, for winning entitlement of the tax deduction.

To assist the redevelopment of Macao's tourism and the development of MICE, a well-structured tax system for human resources development should run in parallel with the evolutionary casino sector. As MICE is an infant industry to the Macao economy, tax preference should be granted not only to related capital investment (which is a common practice in other countries/regions), but also to the development of qualified human resources.

The personal income tax rate is low in Macao (the average tax rate is lower than 10%), and a large portion of the local residents is even not up to pay any income tax due to their low-income level (income level in Macao is generally low as indicated in Table 7-2). However, tax policies are certainly of concern to those in the group of gaming labor who joined the casino industry recently and are now included in the tax basket. For the low-income group not included in the income tax basket, a negative income tax in form of direct subsidies on the related training costs (not personal subsidies) may be considered as an incentive measure.

Finally, it is worthwhile to point out that for minorities who do not have the ability for re-training or re-education within a short time, welfare subsidies (i.e., redistribution of income through tax system) may be a more effective method to deal with existing social problems, as opposed to pressing the industries to hire unqualified human resources. For example, fundamental education may take at least 6 years, or even 9 years, completion time to equip a labor with the basic knowledge (personal assets) for being retrained to qualify for newer and better job opportunities offered in the same or different industries (to a large extent, occupational mobility is determined by one's education level). Indeed, in an

economic society like Macao where level of education and quality of the local community is commonly low, effective tax policies could serve to energize firms and individuals to create a better pool of human resources.

4. Construction of a proactive labor policy system

In principle, "proactive public policy attempts to anticipate the possible threats to, as well as the development opportunities available to them for the satisfying of public interests, and also tries to adequately react in advance to anticipated developments", while "reactive public policy reacts as and when the public interest is actually threatened" (Potucek & LeLoup n.d., p. 6). Recently, various governments in the world have carried out public and academic investigations on proactive public policy system (ibid). In fact, it is generally agreed that the public policy system constructed by the Singapore Government is proactive, which has provided positive supports contributing to the success of its economy. In light of the earlier illustration about Macao's labor policies however, they are undoubtedly reactive in nature.

Besides, in a human-based society (in contrast to mechanical operation system or a laboratory where environment is controllable), an economic policy proved to be effective in killing economic problems in a particular area (or at a point of time) is not necessarily feasible to solve same problem in another area (or at another point in time). For example, economic policies implemented to resolve the unemployment issues in North America in the 1970's and the early 1980's, during the period of the two oil shocks, are not feasible to resolve the current unemployment problem in North America albeit the same pattern of surge in the oil price. Accordingly, public policies must be proactive and kept abreast of developments to deal with new problems emerging from the ever-changing composition and structure of an economy. As of now this is definitely a missing part in Macao's public policy system. To effectively deal with the current gaming human resources deficiency issues, and the related adverse influences to the various local economic sectors, development of a proactive public policy system must be inaugurated as soon as possible.

To institutional economists, "stability is a necessary condition for complex human interaction, but it is not a sufficient condition for efficiency" (North, 1992, p. 258). This argument is quite true if applied to the study of the evolution of the Macao economy and its labor market. Over a long period, extremely low transparency in Macao's labor policies and various reactive decisions made by the Macao Portuguese Government over labor issues have given rise to a rigid institutional framework, including related regulations and customs. This has confined the capacity of the Macao SAR Government to flexibly revise and carry out labor policies to align with the rapid changing structure in the local labor market. In addition, the earlier mentioned informal rules (i.e., consensus) as reinforced by

the public sector, which require casinos to restrict offering of dealer positions to only local people is one of the measures to attain social stability, that actually turned out to cause inefficiency and "instability" in various parts of the Macao economy.

9

Summary and Conclusions

According to the particular situation as given in Macao's labor market, as well as the gaming human resources deficiency identified from this study, it is essential to sum up the major findings and corresponding suggestion in this chapter. First, in consideration of the quantity deficiency of gaming human recourses, four issues must be emphasized.

1. With reference to the quantity requirement of labor inputs for the high value-added recreation and MICE businesses, Macao may not be able to afford to diversify its casino revenue to the exact degree as presented in Las Vegas. In fact, a high degree of casino revenue diversification would require a remarkable increase in the size of its existing workforce. In other words, forcing Macao to develop into a well-diversified destination exactly like Las Vegas seems unrealistic, at least in the coming decade. For this reason, it is an essential task for the Macao Government and the casino industry to make its diversification goal compatible with its available labor resources.

2. Mass market operation is more labor-intensive than VIP market operation. Given Macao's labor force constraint, Macao may need to consider the development as a high value-added and well-regulated VIP play destination, which does not mean the extension or continuity of the traditional gambling-room business. It would be very hard for Macao to become a mass gaming market like Las Vegas. Therefore in terms of market orientation, Macao may pursue a direction between Monte Carlo, which is VIP-concentrated, and Las Vegas, which is mass play dominated. Such a market strategy may be more appropriate for Macao given its labor resources. The Government and the industry may need to research into this issue and take cues from the experiences of casino destinations other than Las Vegas, especially those in Europe. Macao's gaming industry should broaden its scope of future perspectives by following not only the Las Vegas style but also considering non-Las Vegas gaming formats. Macao's gaming industry should create its own growth pattern that is for the best interests of the Macao people and society.

3. Because slot operations are much less labor-intensive, Macao may increase

its slot operation weight to reduce reliance on labor force. Here, high-limit slot games are considerable to satisfy the need of risk-taking players in the Macao market.

4. As of 2007, the labor force productivity of Macao casino employees was similar to that of Las Vegas in terms of gross gaming revenue per employee. While Macao has the advantage of VIP play concentration to boost its labor productivity, Las Vegas has slot operation dominance as an advantage to raise the labor productivity. With the VIP play and slot dominance features held constant, labor force quality, especially technical quality, should have a great impact on labor productivity. The Macao government and the gaming industry should continue their efforts in training casino workers. The persistent labor training efforts will eventually pay off and they will help Macao not only to improve casino labor quality, but also to soothe the pinch of labor shortage.

Second, for the quality deficiency issues, the following conclusions and suggestions are made.

1. Macao casino employees' job performance, as evaluated by casino patrons, was above mediocre but below satisfactory level. There remains room for improvement in the job performance of the labor force. Macao casinos should enhance their labor force quality from both technical and humanization aspects.

2. There are significant differences in employee performance across casino firms, with Wynn standing out particularly in interpersonal performance. Therefore, Wynn could be regarded as the benchmark for other gaming companies to improve their labor force quality. Our study indicates that US based casino firms have a clear advantage in terms of labor force quality. The presence of US casino firms in Macao may pose a threat to the local casino firms but is also a good opportunity for local casinos to improve themselves. Local casino firms should not only pay attention to how to compete with foreign rivals, but also and more importantly, learn from their US competitors in terms of how to treat their customers and employees. For local casino firms, lifting their labor force quality up to the standard of their US competitors would contribute greatly to the improvement of the overall labor force quality of the entire Macao casino industry.

3. The deficiency in interpersonal skills appears more severe than in technical skills and interpersonal skills deserve more attention from the industry in labor training. Here, a customer-above-all philosophy or culture must be established across the industry. It is important for casinos to teach employees interpersonal skills regarding how to respect, greet, help and properly interact with customers. Without a customer-centric mindset, it would be hard for employees to learn and apply interpersonal skills in their daily work. A customer-oriented culture is the

foundation of labor training programs aimed at improving the interpersonal skills of the labor force.

4. While Macao casino employees are generally satisfied with their employers, there remains room for casinos to improve their relationship with their workers. Casino employee overall satisfaction was found to affect job skills and employee morale in a significant way. Job satisfaction backs up labor performance and is thus an inseparable part of the labor quality issue in Macao. Our study shows that salaries and benefits are the most important contributors to job satisfaction. However, over dependence on salaries and benefits to sustain job satisfaction is not an ideal solution. For Macao's casino hotels, a better alternative to enhance employee satisfaction may be relying more on two non-monetary drivers of job satisfaction, namely employee training and encouragement and support for the employees from the employers.

5. On-the-job training, or the training provided by experienced employees and management to new hires and inexperienced workers in the workplace, should be an optimal training approach for Macao casinos. Having experienced coworkers and supervisors train new hires in the workplace can improve new workers' job skills on a continuous basis. In the meantime, the support, help, guidance and encouragement conveyed to the new hires during the on-the-job training process will help build up a harmonious internal relationship between workers and management and among all other staff.

Finally, given Macao's small population and limited workforce, severe labor shortage will exist for the next ten years if the gaming industry grows as expected. For Macao to pursue a sustainable gaming growth, our study recommends that Macao should adopt a controlled gaming development policy. For Macao, healthy gaming growth is more important than rapid gaming growth. To implement a controlled gaming growth strategy, the Macao Government will need not only to limit its issuance of gaming licenses but also to actively get involved in the planning of the gaming capacity.

It must be pointed out that Macao's gaming growth cannot be described as an upward sloping straight line without twists. There will be growth cycles due to economic, political and social reasons. While the overall development trend of Macao's gaming industry indicates a long-term shortage of labor force, occasional and short-term labor surplus may occur during slow growth periods and it is very common for casinos to lay off workers during such times. For casino workers, the risk of being laid off is not necessary a negative thing. Being aware of the layoff possibility could motivate employees to work for self-improvement to become more competitive in job performance and can thus have some positive impact on labor quality. Of course, there must be some social and/or industry mechanisms to financially help laid off casino workers during difficult times. With the enormous

gaming tax revenues and profits generated from Macao's gaming growth, the Government and the industry should be able to provide those job security mechanisms.

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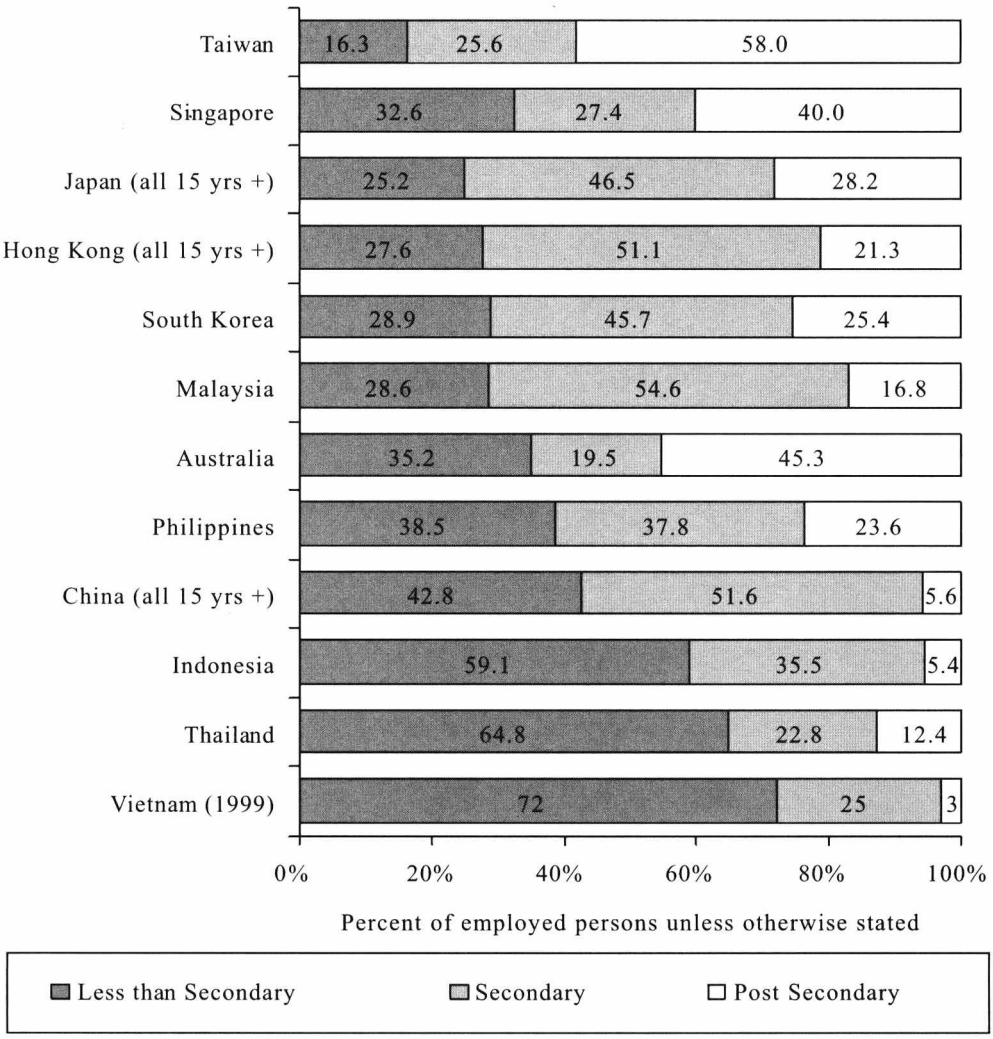
Appendix

A-1 Education Profile of Employed Population in Selected Asian Countries



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