

澳門博彩業的服務質素測量
Measuring Service Quality (SERVQUAL) of Casinos in Macau

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Abstract: Since the liberalization of the gaming industry in Macau in 2003, the market has undergone tremendous changes in many aspects. The market has become more and more competitive. It goes without saying that in a tense competitive market, service excellence is of paramount importance to the success of the casinos concerned. Before any specific service quality improvement can be made, the casino operators need to measure the service standard vis-à-vis their key competitors. SERVQUAL questionnaire is commonly deployed to measure quality service. In this paper, the SERVQUAL approach is modified to contrast the perceived best casinos versus the perceived worst casinos in Macau. This empirical study was made in July 2007 with 26 casinos totaling 3,102 gaming tables and 8,234 slot machines in operation. The analyses shed lights on the key areas that need to be addressed by the various casinos. The modified instrument is called the “Contrast SERVQUAL” with respondents being asked to rate their perceived “best” and “worst” casinos using the standard 22 SERVQUAL questionnaire items and can be deployed for use in other industries.

Key words: Casino, Macau, SERVQUAL, Contrast SERVQUAL

What is Service Quality?

Siu et al. (2001) define service as an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems. Most services consist of acts and interactions, which are social events. The control and management of social events require certain special skills and techniques. In service transactions, the raw material being converted to service output depends, to a great extent, on the facts and information furnished by the customer. Also, clients play a crucial role in influencing the outcome of the transformation process as well (Sureshchandar et al., 2001).

Costa et al. (2004) say that quality is the totality of qualities and characteristics of a product or activity, regarding the ability to fulfill customer requirements. Quality can also be related to the fitness of a service or product to its intended purpose or use, subject to the expectations of the customer. Quality must be in conformity with the customer's requirements or needs.

Service quality is person dependent and has different meanings for different people. Most definitions of service quality are customer-oriented, with customer satisfaction being seen as functions of perceived quality, or perceived quality being a function of customer satisfaction. Service quality reflects the extent to which a service meets customers' needs or expectations. Service quality, as perceived by customers, involves a comparison of what they feel the service should be (expectation, E) with their judgment of the services they received (perceptions, P). It is the difference between customer expectations of service and perceived service. If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs (Sahney et al., 2006; AL-Tamimi et al., 2003). Alternatively, service

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quality is the degree and direction of discrepancy between consumers' perception and expectations in terms of different but relatively important dimensions of the service quality which can affect their future behavior (Prabhakaran et al., 2003). Achieving quality service from the perspectives of the customer requires proactive organizational commitment. Service plays an important role in providing value, and drives a company's success. Quality is not a singular but a multi-dimensional phenomenon (Marković, 2006). Quality in a service context is a measure of the extent to which the service delivered meets the customer's expectations. Knowledge about the quality of goods is insufficient to understand service quality. Service quality is a measure of how well the service level delivered matches customer expectations. Customer expectations are formed by word-of-mouth communications, personal needs, past experience, and what and how the staff communicates to the customer (Pakdil et al., 2005).

Delivering quality service means conforming to customer expectations on a consistent basis. Quality service represents the benefits received against the burdens – like high price, an inconvenient location, unfriendly employees, or an unattractive service facility. Quality service helps maximize the benefits and minimize such burdens. Understanding customer expectations and measuring the organization's performance in those aspects are a central component of building service quality (Barnes et al., 2005).

According to Costa et al. (2004), delivering high quality services and products is a strategy that many companies employ in order to enhance their competing capability. Quality of a service can be defined as the customer's perception of what is good or bad, acceptable or not acceptable service. Quality service is helping customers define their needs, clarifying benefits, building confidence and monitoring and assessing the organization and the impact of its services (Sahney et al., 2006). Service is every act, performance or operation that someone can deliver to someone else, which may not result in the possession of any tangible good. Many services have high human aspect content, making them difficult to standardize. Services have unique characteristics in comparison with goods, viz.: (a) intangibility; (b) heterogeneity - their performance varies depending on time, place, user and encounter; (c) inseparability of production and consumption, making it impossible to store for future uses ; (d) involvement with customer in delivery process making it difficult for the service provider to control the service experience and (e) perishability nature preventing service from being stored, warehoused, or inventoried (Lau et al., 2005; Costa et al., 2004; Marković, 2006; Prabhakaran et al., 2003). All these characteristics make services an abstract and elusive construct which is difficult to assess objectively. There is no value in a product or service until it is in the hands of the customers. (Parasuraman et al., 1988; Parikh, 2006; Li et al., 2002). These characteristics of service apply equally well for the casino industry.

Service quality is crucial to the success of any service organization (Lau et al., 2005). As customers participate in the production and consumption of services, they interact closely with various aspects of the organization. This knowledge enables them to assess critically the services provided, in particular the quality of service. Customers will assess service quality by comparing the service they get with the service they expect. Hence, service quality plays a critical role in adding value to the overall service experience. Kouthouris et al. (2005) argues that service quality is a key concept for organizations; and quality is directly related to customer retention rates, and higher profits for organizations. Satisfaction is the consumer fulfillment response. It is a judgment that a product or service feature provides a pleasurable level of consumption-related fulfillment. Satisfaction is a broader concept than service quality. It includes both cognitive and affective evaluations, while service quality evaluations are mainly a cognitive procedure. Siu et al. (2001) outline the following three themes for service quality: (1) service quality is more difficult for the consumer to evaluate than the quality of goods; (2) service quality perceptions result from a comparison of consumer expectations with actual service performance; and (3) quality evaluations are not made solely on the outcome of a service, but also involve evaluations of the process of service delivery.

Prabhakaran and Satya (2003) claim that customers become dissatisfied:

1. When the service provider is not aware of the service dimensions, which is of importance to its customers.
2. When the service provider does not know the importance given by the customer to each of the service dimension.
3. When the service provider does not know the exact attributes, which make the service dimensions.

Measurement of Service Quality (SERVQUAL)

In the development of an instrument to measure service quality, 97 items were initially used to represent 10 dimensions of service quality. The difference scores from 200 responses from five service categories were used as input into within-dimension coefficient alpha analyses, resulting in a reduced set of 54 items. Oblique factor analysis reduced them further to 34 items reflecting seven dimensions. A second developmental sample was used to reevaluate the dimensionality and reliability of the 34-item measure. Through factor loadings and corrected item-to-total correlation analyses, two factors were combined and some items were deleted, resulting in its current SERVQUAL format. Internal consistency reliability for the developmental studies ranges from 0.87 to 0.90. Validity was established by mean difference tests across subject groups (Bearden et al., 1993).

The SERVQUAL approach to the measurement of service quality has been very popular in recent years. SERVQUAL starts from the assumption that the level of service quality experienced by customers is determined by the gap between their expectations of the service and their perceptions of what they actually receive from a specific service provider. There are five dimensions of service (Parasuraman, Zeithaml, and Berry, 1988; Marković, 2006; Sahu, 2006; Wu et al., 2004; Siu et al., 2001; Donnelly and Shiu, 1999; Al-Tamimi et al., 2003):

- **Reliability**: the ability to perform the promised service dependably and accurately
- **Tangibles**: appearance of physical facilities, equipment, personnel and communication materials
- **Responsiveness**: willingness to help customers and provide prompt service
- **Assurance**: knowledge and courtesy of employees and their ability to convey trust and confidence
- **Empathy**: this dimension refers to the level of caring and individualized attention the firm provides for its customers.

SERVQUAL consists of 22 parallel statements (originally with nine items reversely coded) related to expectations (E) and perceptions (P) of the five service quality dimensions. Customers select a response using a 7-point Likert scale – ranging from 7 i.e. strongly agree to 1, i.e. strongly disagree, to indicate their feelings with regard to each statement. This construct enables the computation of difference scores for each dimension. The difference score ($P - E = Q$), is a measure of the customer's perception of service quality (Q). Where Q is a negative number, a service gap exists; when Q is positive, customer expectations are being exceeded. The use of gaps (difference scores) is used by many researchers with mixed results. (Bearden et al., 1993; Barnes et al., 2005; Gounaris, 2005; Kuo et al., 2005; Lee et al., 2004; Kuo, 2003; Sohn et al., 2002; Coulthard, 2004). Khatibi et al. (2002) allege that SERVQUAL is the most comprehensive and frequently used tool for measuring and managing service quality. In most service settings, impressions of quality are formed during the interaction between the customer and the company's service personnel. Thus, service quality is highly dependent on staff performance during service transactions.

According to Parasuraman et al., (1993), the expectations component of SERVQUAL is a general measure and pertains to customers' normative standards i.e., the service levels customers believe

excellent companies in a sector must deliver. The perceptions component pertains to customers' perceptions of a given firm's service within the sector. Measuring expectations and perceptions separately allows managers to better understand the dynamics of customers' assessments of service quality over time. Another advantage of measuring expectations and perceptions separately is that the gathered data can serve equally well the dual objectives of accurately diagnosing service shortfalls and explaining the variance in related variables. Difference scores can be used for the former while perceptions scores alone can be used for the latter. Rohini and Mahadevappa (2006) propose the following advantages of using SERVQUAL:

- It is accepted as a standard for assessing different dimensions of service quality.
- It has been shown to be valid for a number of service situations.
- It has been known to be reliable.
- The instrument is parsimonious in that it has a limited number of items. This means that customers and employers can fill it out quickly.
- It has a standardized analysis procedure to aid interpretation and results.

Straughan and Cooper (2002) suggest that SERVQUAL can be adapted and examined as a tool for evaluating the process and effectiveness of internal marketing to employees. Each of the adapted SERVQUAL gaps is considered, and attention is given to effective management of each as it relates to internal marketing. Internal marketing involves attracting, developing, motivating, and retaining qualified employees through job products that satisfy their needs. It is the philosophy of treating employees as internal customers, and the strategy of shaping job-products to fit human needs. Internal marketing focuses on motivating internal customers to provide customer-oriented and service-minded performance, hence advancing external marketing objectives. Wisniewski (2001) points out that information on service quality gaps can help managers identify where performance improvement can best be focused. Equally, if gap scores in some areas turn out to be positive, this allows managers to review whether they may be 'over-supplying' this particular feature of the service and whether there is potential for re-deployment of resources into features which are under-performing.

Pakdil and Harwood (2005) report another classification of service quality dimensions, viz.:

- (1) Tangibles: Appearance of physical facilities, equipment, personnel printed and visual materials,
- (2) Reliability: Ability to perform the promised service reliable and accurately,
- (3) Responsiveness: Willingness to help customers and provide prompt service,
- (4) Competence: Possession of required skill and knowledge to perform service,
- (5) Courtesy: Politeness, respect, consideration and friendliness of contact personnel,
- (6) Credibility: Trustworthiness, believability, honesty of the service provider,
- (7) Security: Freedom from danger, risk, or doubt,
- (8) Access: Approachability and ease of contact,
- (9) Communication: Listening to customers and acknowledging their comments; keeping customers informed in a language they can understand,
- (10) Understanding the customer: Making the effort to know customers and their needs

Criticism against SERVQUAL

Despite its popular use, SERVQUAL is not without criticism and disadvantages. According to Beier et al. (2004), SERVQUAL involves some disadvantages regarding the definition and measurement of expectation, high requirements for the test person by asking for importance and adequacy. Brown et al. (1993) point out that difference score measures often have poor reliability, primarily because any positive correlation between the component scores attenuates the reliability of the resulting difference score. Low measure reliability attenuates correlations between constructs. Thus, a measure with low reliability may appear to possess discriminant validity (degree to which measures of theoretically unrelated constructs do not correlate too highly with one another) simply because it is unreliable. Since difference score measures will not typically

demonstrate discriminant validity from their components, their construct validity is questionable (Brown et al., *ibid.*). In addition, Chatterjee and Chatterjee (2005) say that the SERVQUAL responses are ordered categorical (ordinal) in nature, statistical analyses based on continuous responses are not appropriate. They also claim that the difference scores contribute to problems with the reliability, discriminant validity, convergent validity and predictive validity.

Coulthard (2004) and Ramsaran-Fowdar (2005) criticize SERVQUAL on its dimensionality. It would appear that the number of dimensions of service quality is very much influenced by the context under evaluation and the methods of evaluation. Many studies failed to identify the underlying dimensions (Ruyter et al., 1996). Ruyter et al. (*ibid.*) also point out that application of SERVQUAL is limited to existing products, since experience and performance must both be taken into account. Hence, the quality of service innovations can hardly be measured. Paul III (2003) claims that expectations and perceptions should be measured separately, as simultaneous measurement introduces a subtle interaction between actual outcomes (perceptions) and prior experiences. Measuring expectations and perceptions at the same time leads to confounding, because: (1) the expectations data are based on recall, with all the inherent limitations this implies, and (2) expectations assessed after consumption will be swayed by the perceived level of performance.

Importance of Service Quality in Macau

Up to July, 2007, there are 26 casinos competing in Macau. The market has grown from less than 400 gaming tables and 1,000 slot machines prior the liberalization of the industry to 3,102 gaming tables and 8,234 slot machines in operation by July, 2007. The near 10-fold increase in capacity within a short time frame of four years creates a turbulent and dynamic market scenario. Despite the double digit increases on visitation numbers over the last few years, the gaming market is getting more and more competitive. Competition is unlikely to ease off in the foreseeable years as more casinos are still being constructed. By the year 2010, Macau will probably have over 6,000 gaming tables. All casino operators need to improve on their competitive edges over the others in order to survive and succeed. Apart from improving the complimentary to the patrons, casino operators are investing in huge amounts on providing the best atmospherics through building bigger and better premises. All these measures are costly and will erode into the profit margins of the operators. As all operators are doing the similar things in improving commissions/comps and facilities, the effects are becoming marginal.

One really important aspect to address by all casinos is service quality. Before any improvement can be made we need to measure them effectively. Without a scientific approach to measure the service quality, it would be difficult to improve and manage. Despite the various criticisms mentioned in the preceding paragraph, SEVQUAL is still adopted in this empirical study. The findings should shed lights to the gaming industry collectively and to the individual casinos in improving their service quality provided to their patrons. This is important as there will be more regional competition emerging, notably Singapore, Taiwan, Japan, Russia, etc. In order to maintain as the world's leading casino city, Macau has to provide top-notch customer service to its existing and potential customers.

The Contrast SERVQUAL

Basically the Contrast SERVQUAL (see appendix) adopts the 22-item questionnaire with no reverse coding. The respondents are asked to indicate their perceived "best" casino and the "worst" in Macau. In this report their identities are not disclosed. For each of the 22 service quality items, the respondents are asked to rate subjectively their opinion on the importance scores (i.e. Expectations); the satisfaction scores (i.e. Perceptions) of the perceived "best" and "worst" casinos respectively. This modified SERVQUAL is called "Contrast SERVQUAL" as respondents are asked to contrast their satisfaction levels between the best and the worst casinos. An overall satisfaction level is added respectively for the best and worst casinos. With this

modification, this instrument can provide much more information and opportunities to analyze the service quality of the casinos in Macau. The five service quality dimensions are same as in the original SERVQUAL questionnaire i.e. Tangibles (questions 1 to 4); Reliability (questions 5 to 9); Responsiveness (questions 10 to 13); Assurance (questions 14 to 17); Empathy (questions 18 to 22). As the questionnaire is completed by the respondents on an anonymous basis, some personal data (e.g. gender; age, working experience; whether currently working in a casino; number of casinos visited during the last 12 months) are collected for further analyses. The contrast SERVQUAL was translated into Chinese for the local respondents and it was pilot tested with a group of six respondents to ensure the wordings used are understandable. The time required to fill in the contrast SERVQUAL is about 10 minutes which is acceptable to most respondents.

The nomenclature for the variables of this contrast SERVQUAL are detailed as follows (with XX representing the corresponding SERVQUAL items):

SQI_XX	SERVQUAL Importance scores
BSQS_XX	Perceived Best casinos SERVQUAL Satisfaction scores
WSQS_XX	Perceived Worst casinos SERVQUAL Satisfaction scores
Bgap_XX	Gaps (i.e. Importance – Satisfaction) for Perceived Best casinos
Wgap_XX	Gaps (i.e. Importance – Satisfaction) for Perceived Worst casinos
BWPG_XX	Difference of Satisfaction scores (i.e. Performance Gaps) between the perceived Best and perceived Worst casinos

Results of the Contrast SERVQUAL survey on Casinos in Macau

There are a total of 241 respondents selected by convenience sampling approach from students from three universities in Macau and casino employees. Bearing in mind with this survey design deficiency, it still provides useful insight on the quality service situation in Macau. There are 109 male and 131 female (with 1 missing value for gender). Among them, 35 respondents are aged below 21 years, 161 aged between 21 and 30 years, and 43 aged over 30 years (2 missing value). Of these respondents, 35 have less than one year working experience, 160 have between one to 10 years experience, and 42 have over 10 years experience (with 4 missing value). There are 99 casino employees and 140 non-casino employees (2 missing value). For the frequency of visits to casinos in the last 12 months, 76 visited casino for three or less times, 103 visited four to seven times, and 57 visited over seven times (5 missing value).

In the following tables, the means for the respective SERVQUAL items were computed. In the Likert scale range from 1 to 7, with higher means representing more important or better performed.

Table 1: SERVQUAL items in descending order of importance		Mean
SQL_16	Their employees are polite	6.28
SQL_5	They can comply with promise to do something on time	6.07
SQL_1	They have up-to-date equipment	5.94
SQL_8	They provide services at the time they promise to do so	5.91
SQL_4	Physical facilities keep with type of services provided	5.85
SQL_11	Customers can get prompt services from their employees	5.83
SQL_12	Their employees are willing to help customers	5.82
SQL_22	They operate hours convenient to all their customers	5.81
SQL_2	Their physical facilities are visually appealing	5.81
SQL_15	Customers feel safe in their transactions with their employees	5.73
SQL_13	Even their employees are busy, they respond to customers requests promptly	5.66
SQL_7	They are dependable	5.64
SQL_20	Their employees know the needs of customers	5.63
SQL_6	They are sympathetic and reassuring to customers who have problems	5.63
SQL_3	Their employees are well dressed and appear neat	5.62
SQL_9	They keep their records accurately	5.62
SQL_14	Customers can trust their employees	5.58
SQL_21	The company has their customers' best interest at heart	5.57
SQL_17	Their employees get adequate support from the company to do their jobs well	5.48
SQL_19	Their employees can give customers personal attention	5.44
SQL_10	They tell customers exactly when services will be performed	5.24
SQL_18	The company can give customers individual attention	5.22

Table 1 outlines the perceived extent of importance for the 22 items. The most important items are politeness, keeping promise, up-to-date equipment, punctual service, good facilities. The importance scores range from the lowest at 5.22 to the highest at 6.28. Thus all these items are perceived to be important.

Table 2: SERVQUAL items in descending order of Satisfaction for best Casinos	Mean
BSQS_22 They operate hours convenient to all their customers	5.90
BSQS_1 They have up-to-date equipment	5.86
BOverall Overall satisfaction	5.84
BSQS_2 Their physical facilities are visually appealing	5.78
BSQS_16 Their employees are polite	5.74
BSQS_3 Their employees are well dressed and appear neat	5.56
BSQS_4 Physical facilities keep with type of services provided	5.32
BSQS_12 Their employees are willing to help customers	5.31
BSQS_11 Customers can get prompt services from their employees	5.30
BSQS_5 They can comply with promise to do something on time	5.18
BSQS_8 They provide services at the time they promise to do so	5.18
BSQS_15 Customers feel safe in their transactions with their employees	5.17
BSQS_9 They keep their records accurately	5.15
BSQS_14 Customers can trust their employees	5.11
BSQS_17 Their employees get adequate support from the company to do their jobs well	5.09
BSQS_19 Their employees can give customers personal attention	5.08
BSQS_18 The company can give customers individual attention	5.05
BSQS_13 Even their employees are busy, they respond to customers requests promptly	5.01
BSQS_20 Their employees know the needs of customers	5.00
BSQS_7 They are dependable	4.98
BSQS_10 They tell customers exactly when services will be performed	4.94
BSQS_6 They are sympathetic and reassuring to customers who have problems	4.86
BSQS_21 The company has their customers' best interest at heart	4.85

Table 2 outlines the perceived extent of satisfaction for the 22 items for the perceived best casinos. The satisfaction scores range from the lowest at 4.85 to the highest at 5.90. Thus all these items are perceived to be well performed. Perceived best casinos do well in operating hours, equipment, physical facilities, politeness, well-groomed employees, willingness to help customers.

Table 3: SERVQUAL items in descending order of Satisfaction for worst Casinos		Mean
WSQS_22	They operate hours convenient to all their customers	4.98
WSQS_9	They keep their records accurately	3.82
WSQS_3	Their employees are well dressed and appear neat	3.72
WSQS_15	Customers feel safe in their transactions with their employees	3.65
WSQS_4	Physical facilities keep with type of services provided	3.58
WSQS_17	Their employees get adequate support from the company to do their jobs well	3.54
WSQS_8	They provide services at the time they promise to do so	3.54
WSQS_7	They are dependable	3.52
WSQS_5	They can comply with promise to do something on time	3.48
WSQS_14	Customers can trust their employees	3.42
WSQS_10	They tell customers exactly when services will be performed	3.40
WSQS_1	They have up-to-date equipment	3.38
WSQS_11	Customers can get prompt services from their employees	3.35
WSQS_21	The company has their customers' best interest at heart	3.34
WSQS_18	The company can give customers individual attention	3.33
WSQS_2	Their physical facilities are visually appealing	3.30
WSQS_19	Their employees can give customers personal attention	3.30
WSQS_6	They are sympathetic and reassuring to customers who have problems	3.28
WSQS_13	Even their employees are busy, they respond to customers requests promptly	3.28
WSQS_20	Their employees know the needs of customers	3.25
WOverall	Overall satisfaction	3.19
WSQS_12	Their employees are willing to help customers	3.18
WSQS_16	Their employees are polite	3.17

Table 3 above outlines the perceived extent of satisfaction for the 22 items for the perceived worst casinos. The satisfaction scores range from the lowest at 3.17 to the highest at 4.98. In contrast with the best casinos, the worst casinos performed much more poorly. With the exception of operating hours, all other 21 SERVQUAL items score a failing mean (i.e below the neutral value of 4). The least well performed service quality items are: politeness, willingness to help customers, knowing customer needs, responding to customer requests, being sympathetic and reassuring, personal attention, and physical facilities. The average overall satisfaction level for the perceived worst casinos is 3.19, contrasting to the average value of 5.84 for the overall satisfaction level for the perceived best performing casinos.

A common fallacy among business practitioners is to make improvements on those less well performed items. In fact if the less well performed items are perceived to be unimportant to the customers, then no improvement is needed. The resources should be more usefully deployed on improving items that are perceived to be important to the customers. The difference scores (i.e.

performance gaps which are operationally defined as the difference between the importance scores and the satisfaction scores) in the SERVQUAL design provide useful information to the managers in setting improvement priorities for the various service quality items. Tables 4 and 5 below list out the top ten performance gaps of the perceived best and worst casinos respectively.

Table 4: Top ten performance gaps for the best casinos		Mean
Bgap5	They can comply with promise to do something on time	0.89
Bgap6	They are sympathetic and reassuring to customers who have problems	0.77
Bgap8	They provide services at the time they promise to do so	0.73
Bgap21	The company has their customers' best interest at heart	0.73
Bgap7	They are dependable	0.66
Bgap13	Even their employees are busy, they respond to customers requests promptly	0.65
Bgap20	Their employees know the needs of customers	0.63
Bgap15	Customers feel safe in their transactions with their employees	0.55
Bgap16	Their employees are polite	0.54
Bgap4	Physical facilities keep with type of services provided	0.53

The above ten service quality items need to be improved by those best casinos.

Table 5: Top ten performance gaps for the worst casinos		Mean
Wgap16	Their employees are polite	3.12
Wgap12	Their employees are willing to help customers	2.64
Wgap5	They can comply with promise to do something on time	2.59
Wgap1	They have up-to-date equipment	2.56
Wgap2	Their physical facilities are visually appealing	2.50
Wgap11	Customers can get prompt services from their employees	2.47
Wgap20	Their employees know the needs of customers	2.39
Wgap13	Even their employees are busy, they respond to customers requests promptly	2.39
Wgap8	They provide services at the time they promise to do so	2.37
Wgap6	They are sympathetic and reassuring to customers who have problems	2.34

Obviously the means of the gaps for the perceived worst casinos are much larger than those of the perceived best casinos. Staff politeness is most in need for improvement.

Table 6 below depicts the differences of satisfaction scores between the perceived best and worst casinos.

Table 6: Differences of the satisfaction scores between the best & worst casinos		Mean
BWPG16	Their employees are polite	2.58
BWPG1	They have up-to-date equipment	2.50
BWPG2	Their physical facilities are visually appealing	2.47
BWPG12	Their employees are willing to help customers	2.13
BWPG11	Customers can get prompt services from their employees	1.96
BWPG3	Their employees are well dressed and appear neat	1.84
BWPG19	Their employees can give customers personal attention	1.79
BWPG20	Their employees know the needs of customers	1.75
BWPG4	Physical facilities keep with type of services provided	1.75
BWPG13	Even their employees are busy, they respond to customers requests promptly	1.72
BWPG18	The company can give customers individual attention	1.71
BWPG5	They can comply with promise to do something on time	1.71
BWPG14	Customers can trust their employees	1.69
BWPG8	They provide services at the time they promise to do so	1.65
BWPG6	They are sympathetic and reassuring to customers who have problems	1.58
BWPG17	Their employees get adequate support from the company to do their jobs well	1.55
BWPG10	They tell customers exactly when services will be performed	1.53
BWPG15	Customers feel safe in their transactions with their employees	1.53
BWPG21	The company has their customers' best interest at heart	1.50
BWPG7	They are dependable	1.45
BWPG9	They keep their records accurately	1.34
BWPG22	They operate hours convenient to all their customers	0.92

The most contrasting differences between the best and worst casinos lie in staff politeness, equipment, physical facilities, and willingness to help. As the operating hours for all casinos are the same (i.e. round the clock throughout the year), why then there is still a performance gaps between the perceived best and worst casinos? This may be probably due to some subjective bias subconsciously existed in respondents minds. Even the gaps listed in Table 6 are adjusted by a magnitude of 0.92 (i.e. the gap for SERVQUAL item 22 on operating hours), the performance gaps between the perceived best and worst casinos are still substantial.

In order to reveal discerning differences among the various respondent groups, independent samples t-test and one-way ANOVA are performed on the importance scores, performance scores for perceived best casinos, and performance scores for perceived worst casinos. Tables 7 to 11 below, outline those SERVQUAL items which are significantly different at 0.05 level among the various demographic groups.

Table 7: T-test with gender as discerning factor	D1	Gender	N	Mean
SQI_19 Their employees can give customers personal attention	1.00	Male	109	5.68
	2.00	Female	130	5.25
BSQS_1 They have up-to-date equipment	1.00	Male	109	5.99
	2.00	Female	131	5.76
BSQS_17 Their employees get adequate support from the company to do their jobs well	1.00	Male	109	5.24
	2.00	Female	131	5.68
BSQS_18 The company can give customers individual attention	1.00	Male	109	5.20
	2.00	Female	131	5.68
BSQS_19 Their employees can give customers personal attention	1.00	Male	109	5.22
	2.00	Female	131	4.95

As compared to the female respondents, the male attach more importance on personal attention. Male are more satisfied with the up-to-date equipment, and personal attention at the perceived best casinos. On the other hand, female are more satisfied with support from casino to staff, and individual personal attention for the perceived best casinos.

Table 8: T-test with casino employees and non-casino employees as discerning factor	D4	Curently working in casino?	N	Mean
SQI_6 They are sympathetic and reassuring to customers who have problems	1.00	Yes	99	5.83
	2.00	No	139	5.49
BSQS_3 Their employees are well dressed and appear neat	1.00	Yes	99	5.72
	2.00	No	140	5.44
BOverall Overall satisfaction	1.00	Yes	99	5.96
	2.00	No	139	5.76
WSQS_9 They keep their records accurately	1.00	Yes	98	4.13
	2.00	No	140	3.60
WSQS_15 Customers feel safe in their transactions with their employees	1.00	Yes	98	3.89
	2.00	No	140	3.50

Those respondents working in the casinos feel that sympathy and reassuring to customers with problem is more important than those who are non-casino employees. This difference may be due to the effect of training and job requirement from the casinos. On the satisfaction scores on staff grooming and overall satisfaction for the perceived best casinos, and keeping accurate records and safe transaction for the perceived worst casinos, those working in casinos are significantly more satisfied than those who are not working in casinos.

Table 9: One-way ANOVA with age groups as discerning factor (Post hoc test: Bonferroni)

Multiple Comparisons

Bonferroni

Dependent Variable	(I) D2New Age	(J) D2New Age	Mean Difference (I-J)	Sig.
SQI_2 Their physical facilities are visually appealing	1.00 21 and below	2.00 21 - 30 years	-.48*	.03
		3.00 31 and above	-.45	.13
	2.00 21 - 30 years	1.00 21 and below	.48*	.03
		3.00 31 and above	.03	1.00
	3.00 31 and above	1.00 21 and below	.45	.13
		2.00 21 - 30 years	-.03	1.00
SQI_3 Their employees are well dressed and appear neat	1.00 21 and below	2.00 21 - 30 years	-.50*	.03
		3.00 31 and above	-.40	.25
	2.00 21 - 30 years	1.00 21 and below	.50*	.03
		3.00 31 and above	.10	1.00
	3.00 31 and above	1.00 21 and below	.40	.25
		2.00 21 - 30 years	-.10	1.00
SQI_21 The company has their customers' best interest at heart	1.00 21 and below	2.00 21 - 30 years	-.42	.16
		3.00 31 and above	-.64*	.05
	2.00 21 - 30 years	1.00 21 and below	.42	.16
		3.00 31 and above	-.22	.81
	3.00 31 and above	1.00 21 and below	.64*	.05
		2.00 21 - 30 years	.22	.81
WSQS_1 They have up-to-date equipment	1.00 21 and below	2.00 21 - 30 years	-.13	1.00
		3.00 31 and above	.60	.13
	2.00 21 - 30 years	1.00 21 and below	.13	1.00
		3.00 31 and above	.73*	.00
	3.00 31 and above	1.00 21 and below	-.60	.13
		2.00 21 - 30 years	-.73*	.00
WSQS_2 Their physical facilities are visually appealing	1.00 21 and below	2.00 21 - 30 years	-.07	1.00
		3.00 31 and above	.52	.24
	2.00 21 - 30 years	1.00 21 and below	.07	1.00
		3.00 31 and above	.59*	.02
	3.00 31 and above	1.00 21 and below	-.52	.24
		2.00 21 - 30 years	-.59*	.02

*. The mean difference is significant at the .05 level.

Younger respondents (below 21 years old) attach lower importance on appealing facilities, well grooming, and having customers' interest at heart. Compared to the respondent group with age over 30, the 20-30 year old respondents are more satisfied with up-to-date equipment and physical facilities at the perceived worst casinos.

Table 10: One-way ANOVA with working experience groups as discerning factor (Post hoc test: Bonferroni)

Bonferroni

Dependent Variable	(I) D3New Working Experience	(J) D3New Working Experience	Mean Difference (I-J)	Sig.
BSQS_20 Their employees know the needs of customers	1.00 Below 1 year	2.00 1 - 10 years	.52*	.02
		3.00 Over 10 years	.48	.11
	2.00 1 - 10 years	1.00 Below 1 year	-.52*	.02
		3.00 Over 10 years	-.04	1.00
	3.00 Over 10 years	1.00 Below 1 year	-.48	.11
		2.00 1 - 10 years	.04	1.00
WSQS_8 They provide services at the time they promise to do so	1.00 Below 1 year	2.00 1 - 10 years	.38	.26
		3.00 Over 10 years	.75*	.02
	2.00 1 - 10 years	1.00 Below 1 year	-.38	.26
		3.00 Over 10 years	.37	.20
	3.00 Over 10 years	1.00 Below 1 year	-.75*	.02
		2.00 1 - 10 years	-.37	.20
WSQS_9 They keep their records accurately	1.00 Below 1 year	2.00 1 - 10 years	-.19	1.00
		3.00 Over 10 years	.31	.76
	2.00 1 - 10 years	1.00 Below 1 year	.19	1.00
		3.00 Over 10 years	.50*	.04
	3.00 Over 10 years	1.00 Below 1 year	-.31	.76
		2.00 1 - 10 years	-.50*	.04
WSQS_10 They tell customers exactly when services will be performed	1.00 Below 1 year	2.00 1 - 10 years	.40	.18
		3.00 Over 10 years	.63*	.05
	2.00 1 - 10 years	1.00 Below 1 year	-.40	.18
		3.00 Over 10 years	.23	.72
	3.00 Over 10 years	1.00 Below 1 year	-.63*	.05
		2.00 1 - 10 years	-.23	.72
WSQS_19 Their employees can give customers personal attention	1.00 Below 1 year	2.00 1 - 10 years	.63*	.01
		3.00 Over 10 years	.91*	.00
	2.00 1 - 10 years	1.00 Below 1 year	-.63*	.01
		3.00 Over 10 years	.27	.41
	3.00 Over 10 years	1.00 Below 1 year	-.91*	.00
		2.00 1 - 10 years	-.27	.41
WSQS_21 The company has their customers' best interest at heart	1.00 Below 1 year	2.00 1 - 10 years	.31	.50
		3.00 Over 10 years	.68*	.05
	2.00 1 - 10 years	1.00 Below 1 year	-.31	.50
		3.00 Over 10 years	.36	.25
	3.00 Over 10 years	1.00 Below 1 year	-.68*	.05
		2.00 1 - 10 years	-.36	.25

*. The mean difference is significant at the .05 level.

Table 10 reveals the pattern that respondents with less years of working experience are more satisfied with knowing customer needs in the perceived best casinos. They are also more satisfied with keeping promise, accurate records, keeping customers informed, and having customers' interest at heart for the perceived worst casinos.

Table 11: One-way ANOVA with casino visit frequency groups as discerning factor (Post hoc test:)

Multiple Comparisons

Bonferroni

Dependent Variable	(I) D5New Number of casinos visited in last 12 months	(J) D5New Number of casinos visited in last 12 months	Mean Difference (I-J)	Sig.
SQI_1 They have up-to-date equipment	1.00 0 - 3 times	2.00 4 - 7 times	.09	1.00
		3.00 More than 7 times	-.31	.16
	2.00 4 - 7 times	1.00 0 - 3 times	-.09	1.00
		3.00 More than 7 times	-.40*	.02
SQI_13 Even their employees are busy, they respond to customers requests promptly	1.00 0 - 3 times	2.00 4 - 7 times	-.41*	.03
		3.00 More than 7 times	-.38	.12
	2.00 4 - 7 times	1.00 0 - 3 times	.41*	.03
		3.00 More than 7 times	.03	1.00
SQI_19 Their employees can give customers personal attention	1.00 0 - 3 times	2.00 4 - 7 times	-.27	.31
		3.00 More than 7 times	-.58*	.01
	2.00 4 - 7 times	1.00 0 - 3 times	.27	.31
		3.00 More than 7 times	-.31	.27
BSQS_1 They have up-to-date equipment	1.00 0 - 3 times	2.00 4 - 7 times	.25	.14
		3.00 More than 7 times	-.31	.10
	2.00 4 - 7 times	1.00 0 - 3 times	-.25	.14
		3.00 More than 7 times	-.56*	.00
BSQS_2 Their physical facilities are visually appealing	1.00 0 - 3 times	2.00 4 - 7 times	.05	1.00
		3.00 More than 7 times	-.49*	.01
	2.00 4 - 7 times	1.00 0 - 3 times	-.05	1.00
		3.00 More than 7 times	-.54*	.00
BSQS_3 Their employees are well dressed and appear neat	1.00 0 - 3 times	2.00 4 - 7 times	-.20	.59
		3.00 More than 7 times	-.63*	.00
	2.00 4 - 7 times	1.00 0 - 3 times	.20	.59
		3.00 More than 7 times	-.42*	.04
BOverall Overall satisfaction	1.00 0 - 3 times	2.00 4 - 7 times	-.08	1.00
		3.00 More than 7 times	-.28*	.03
	2.00 4 - 7 times	1.00 0 - 3 times	.08	1.00
		3.00 More than 7 times	-.19	.17
WSQS_12 Their employees are willing to help customers	1.00 0 - 3 times	2.00 4 - 7 times	.31	.32
		3.00 More than 7 times	.58*	.03
	2.00 4 - 7 times	1.00 0 - 3 times	-.31	.32
		3.00 More than 7 times	.27	.58
WSQS_16 Their employees are polite	1.00 0 - 3 times	2.00 4 - 7 times	.09	1.00
		3.00 More than 7 times	.61*	.02
	2.00 4 - 7 times	1.00 0 - 3 times	-.09	1.00
		3.00 More than 7 times	.52*	.04
3.00 More than 7 times	1.00 0 - 3 times	-.61*	.02	
	2.00 4 - 7 times	-.52*	.04	

*. The mean difference is significant at the .05 level.

The respondents are aggregated into three groups, i.e. infrequent visitors (less than four times in a year), average visitors (four to seven times in a year), and frequent visitors (more than seven

times in a year). Those going to casinos more often attach more importance on up-to-date equipment, prompt response, and personal attention. For the perceived best casinos, the more frequent visitors are more satisfied with up-to-date equipment, appealing facilities, well groomed staff, and overall. On the other hand, the more frequent visitors are less satisfied with willing to help customers and politeness in the perceived worst casinos. This analysis sheds lights on where to improve in order to retain frequent patrons to the casinos.

In order to find out what are the key determinants to overall satisfaction for the perceived best and perceived worst casinos as a contrast, multiple linear regression analyses with stepwise method are performed. Tables 12 and 13 are the results for perceived best and worst casinos respectively.

Table 12: Multiple linear regression for best casinos

Coefficients ^a

Model	Unstandardized Coefficients	Standardized Coefficients
	B	Beta
(Constant)	3.627	
BSQS_7 They are dependable	.126	.219
BSQS_11 Customers can get prompt services from their employees	.111	.178
BSQS_3 Their employees are well dressed and appear neat	.096	.166
BSQS_18 The company can give customers individual attention	.092	.145

a. Dependent Variable: BOverall Overall satisfaction

For the perceived best casinos, the key factors influencing respondents' overall satisfaction are: dependability; prompt service; well grooming, and individual attention. As the R-square (i.e. coefficient of determination) for the regression equation for best casinos is 0.23, these four factors explain for 23% of the variability of the overall satisfaction score.

The magnitude of the standardized coefficients represents the extent of influence of that particular predictor variable.

The regression formula for the perceived best casinos can be written as:

$$\text{Overall satisfaction for perceived best casinos} = 3.627 + 0.126\text{BSQS}_7 + 0.111\text{BSQS}_{11} + 0.096\text{BSQS}_3 + 0.092\text{BSQS}_{18}$$

Table 13: Multiple linear regression for worst casinos

Coefficients ^a

	Unstandardized Coefficients	Standardized Coefficients
	B	Beta
(Constant)	.177	
WSQS_12 Their employees are willing to help customers	.183	.232
WSQS_2 Their physical facilities are visually appealing	.219	.283
WSQS_6 They are sympathetic and reassuring to customers who have problems	.178	.177
WSQS_17 Their employees get adequate support from the company to do their jobs well	.133	.143
WSQS_16 Their employees are polite	.094	.121
WSQS_19 Their employees can give customers personal attention	.106	.115

a. Dependent Variable: WOverall Overall satisfaction

Similarly for the perceived worst casinos, the key factors influencing respondents' overall satisfaction are: Willingness to help customers, physical facilities, sympathetic to customers with problems, support to staff, politeness, and personal attention. The R-square (i.e. coefficient of

determination) for the regression equation for best casinos is 0.51, these six factors can already explain for 51% of the variability of the overall satisfaction score. The regression formula for the perceived worst casinos can be written as:

$$\text{Overall satisfaction for perceived worst casinos} = 0.177 + 0.183\text{WSQS}_{12} + 0.219\text{WSQS}_{2} + 0.178\text{WSQS}_{6} + 0.133\text{WSQS}_{17} + 0.094\text{WSQS}_{16} + 0.106\text{WSQS}_{19}$$

As the SERVQUAL instrument has been introduced over a decade ago and is being widely used to measure service quality in many industries, its validity is not specifically tested in this study. Despite the criticism on the SERVQUAL design which may affect its validity (see earlier discussion), SERVQUAL is generally reckoned as a useful tool.

The reliability for this revised contrast SERVQUAL instrument is tested. Table 14 depicts the Cronbach Reliability analyses for the various constructs (viz., importance scores, satisfaction scores, tangibles, reliability, responsiveness, assurance, and empathy for the best and worst casinos respectively). On the whole the Cronbach's alpha values are acceptable with the lowest 0.594 for Responsiveness for perceived worst casinos.

Table 14: Reliability analysis for the contrast SERVQUAL constructs (Cronbach's alphas)

	All 22 items	Tangibles Items 1-4	Reliability Items 5-9	Responsiveness Items 10-13	Assurance Items 14-17	Empathy Items 18-22
Importance Scores	0.895	0.621	0.726	0.739	0.614	0.776
Satisfaction for best casinos	0.902	0.697	0.779	0.754	0.714	0.728
Satisfaction for worst casinos	0.894	0.758	0.801	0.594	0.780	0.745

Table 15 below summarizes the five quality service dimensions. Relatively speaking, perceived best casinos need to improve on aspects under reliability dimension. The perceived worst casinos indeed need to improve on all service quality dimensions, in particular in the responsiveness dimension.

Table 15 Service quality dimensions scores

	Importance	Satisfaction for perceived Best casinos	Satisfaction for perceived Worst casinos
Tangibles Items 1-4	5.80	5.63	3.60
Reliability Items 5-9	5.77	5.07	3.52
Responsiveness Items 10-13	5.64	5.14	3.30
Assurance Items 14-17	5.77	5.28	3.45
Empathy Items 18-22	5.53	5.18	3.64

An exploratory factor analysis on the SERVQUAL importance items was conducted. Using

varimax rotation and principal components extraction, six factors are identified. The six factors can be labeled as: Helpfulness; Personal care; Reliability; Up-to-date equipment; Appearance; and Politeness.

Table 16: Factor analysis on the SERVQUAL Importance items

Rotated Component Matrix ^a

	Component					
	1	2	3	4	5	6
SQL_5 They can comply with promise to do something on time	.716	-.067	.103	.130	.226	-.021
SQL_11 Customers can get prompt services from their employees	.688	.066	.222	.055	.185	.204
SQL_12 Their employees are willing to help customers	.624	.235	.243	-.150	.031	.123
SQL_13 Even busy, they respond to customers requests promptly	.615	.144	.274	.187	.130	.159
SQL_15 Customers feel safe in their transactions with their employees	.600	.256	.025	.156	.003	-.066
SQL_14 Customers can trust their employees	.540	.282	.275	.280	-.201	.037
SQL_6 They are sympathetic & reassuring to customers who have problems	.447	.373	.326	.000	.126	-.129
SQL_18 The company can give customers individual attention	.016	.761	.237	.076	.098	.135
SQL_19 Their employees can give customers personal attention	.229	.721	.225	.044	.009	.033
SQL_17 Their employees get adequate support from to do their jobs well	.040	.698	-.002	.027	.297	.209
SQL_21 The company has their customers' best interest at heart	.310	.547	.177	.073	.032	-.360
SQL_20 Their employees know the needs of customers	.469	.546	.212	.163	.013	-.186
SQL_22 They operate hours convenient to all their customers	.409	.445	-.145	.420	-.127	.276
SQL_10 They tell customers exactly when services will be performed	.128	.258	.701	.075	.052	.167
SQL_8 They provide services at the time they promise to do so	.431	-.047	.670	.036	.040	-.006
SQL_7 They are dependable	.290	.288	.591	.162	-.087	-.398
SQL_9 They keep their records accurately	.148	.254	.571	.164	.193	.119
SQL_2 Their physical facilities are visually appealing	.135	.007	.167	.804	.115	-.057
SQL_1 They have up-to-date equipment	.087	.122	.075	.761	.201	.065
SQL_4 Physical facilities keep with type of services provided	.312	.225	-.003	.054	.723	-.124
SQL_3 Their employees are well dressed and appear neat	.034	.068	.161	.280	.691	.094
SQL_16 Their employees are polite	.301	.220	.221	.081	-.011	.728

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Conclusion and recommendations

The contrast SERVQUAL can reveal insight as to which areas of improvement are needed for the perceived best and perceived worst casinos respectively. The contrast between the best and the worst helps respondents to really differentiate the two extreme types of service providers. More computations and analyses are possible (e.g. the performance difference between the perceived best and worst operators; performance gaps for specific types of casinos;). The reliability for the revised survey instrument is established. This contrast SERVQUAL is first deployed to measure the service quality of casinos in Macau. The same can be applicable in other industries and other cultural settings.

The key findings in this empirical study are that the performance standards between the perceived best and worst casinos are quite large and that politeness stands out as the single most important attribute and the perceived worst casinos performed least well in this respect. Tables 4 and 5 show the key improvement areas for the perceived best and worst casinos respectively. Regression formulae to determine the overall satisfaction level are computed for the perceived best and worst casinos respectively. These provide useful guidelines to the casinos in Macau to improve. However the contrast SERVQUAL still adopts the SERVQUAL items which may still be generic in nature. Where improvement areas are revealed, some in-depth focus group discussions should be conducted to solicit more specific and detailed information concerning each area for improvement.

The existing format of contrast SERVQUAL (see appendix) can serve as the core instrument to collect basic information regarding service quality. More items specifically related to the gaming industry in Macau should be incorporated in the questionnaire (e.g. casino bus, entertainment shows, type of games, complimentary...etc.) for similar studies in the future. In this regard, Parasuraman et al. (1991) advocate that the objective of SERVQUAL is to diagnose a broad area

of a company's service quality weaknesses and strengths. Minor modifications in the wording to adapt them into specific setting are appropriate, and deletion of items could affect the integrity of the scale. They (ibid.) suggest that context specific items can be used to supplement SERVQUAL. However the items should be similar in form to the existing SERVQUAL items. New items not fitting under the existing SERVQUAL dimensions may be used but should be analyzed separately. The SERVQUAL can be supplemented with additional qualitative or quantitative research.

Because of the dynamic nature of the gaming market in Macau, this sort of study on benchmarking the quality service should be done collectively by the various casino operators and information on the findings should be shared among them. This may help the concerned operator to focus attention to improve on issues that really matter. The study should also be done periodically on a longitudinal basis so that changes in customers' perception can be effectively tracked and monitored for improvement.

Macau gaming industry has expanded very rapidly over the last few years. In order to maintain its leading position in the world, gaming operators under the coordination of the regulatory body, should work together in a co-opetitive manner (i.e. cooperative competition) and create a healthy competitive environment. Koo (2007) proposes the establishment of Macau Casino Association to promote Macau casinos' uniqueness and the creation of industry indicators. Some useful industry researches should be conducted jointly among the gaming operators in order that a well-planned, properly regulated and harmonious market situation can be ensured for the long term benefits for Macau. The gaming market in Macau is large enough for a steady and harmonious growth for all players. Concerted efforts among the casino operators to launch an industry survey of this nature will help improve the overall service quality standard of the gaming industry.

Service Quality				
Your name : _____ In your opinion, the best casinos in Macau is : _____ In your opinion, the worst casinos in Macau is : _____		Importance Please rate the importance : 7 = Most Important 6 = Important 5 = Slightly Important 4 = Neutral 3 = Slightly Unimportant 2 = Unimportant 1 = Most unimportant	Satisfaction Please rate the satisfaction : 7 = Most satisfactory 6 = Satisfactory 5 = Slightly satisfactory 4 = Neutral 3 = Slightly dissatisfactory 2 = Dissatisfactory 1 = Most dissatisfactory	
	Service Quality Items	As a customer, you think the importance score should be:	The satisfactory level of the BEST casino is:	The satisfactory level of the WORST casino is:
1	They have up-to-date equipment			
2	Their physical facilities are visually appealing			
3	Their employees are well dressed and appear neat			
4	Physical facilities keep with type of services provided			
5	They can comply with promise to do something on time			
6	They are sympathetic and reassuring to customers who have problems			
7	They are dependable			
8	They provide services at the time they promise to do so			
9	They keep their records accurately			
10	They tell customers exactly when services will be performed			
11	Customers can get prompt services from their employees			
12	Their employees are willing to help customers			
13	Even their employees are busy, they respond to customers requests promptly			
14	Customers can trust their employees			
15	Customers feel safe in their transactions with their employees			
16	Their employees are polite			
17	Their employees get adequate support from the company to do their jobs well			
18	The company can give customers individual attention			
19	Their employees can give customers personal attention			
20	Their employees know the needs of customers			
21	The company has their customers' best interest at heart			
22	They operate hours convenient to all their customers			
The Overall Satisfaction level for this casino is::				
Gender : Male []; Female [] Age : 21and below ▾ []; 21-30 years []; 31-40 years []; 41-50 years []; 50 and above [] Working experience : Below 1 year []; 1-10 years []; 11-20 years []; 20 years and above [] Currently working in casino? : Yes []; No [] Number of casinos visited last 12 months : _____				

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