

學號科目	系級	科	日 期	頁 數	試 題 編 號
Course		科	Date, Period	第 節	Course No.
			4 月 23 日		

6-2

To attract retailers, Rakuten charged them as little as \$475 a year to appear on the site; other cybermall's wanted \$3,000 to \$10,000 when he started out. Merchants can edit their sites and do market analysis by accessing Rakuten's database and software. "We have two other sites, but nothing compares to the one on Rakuten," says Midori Hara, Net sales director for Niigata-based sake wholesaler Harashu. Mikitani has also boosted revenue by selling ad space for half the price of most rival portals. In 2000 alone, he expects that the number of retailers will swell to 5,000 and revenue will grow fivefold.

Rakuten has proved especially adept at building an audience. It has online auctions and a "flea market" where users sell up to 40,000 items every month; Rakuten gets a 5% cut. Its site, www.rakuten.co.jp, gets 70 million page views a month, ranking behind only Yahoo! and two other portals. An online translation service for merchants and other features are on the way. "I want to make Rakuten the most exciting place to buy, sell, or trade products and services," Mikitani says.

The growth prospects certainly seem bright. Japan's Net population, now 20 million, should balloon as mobile Net phones and portable computing devices proliferate. Andersen Consulting expects consumer e-commerce will explode from \$3.2 billion last year, to \$66 billion in 2004.

That's just Japan. E-commerce is projected to boom around the rest of Asia, and soon, Mikitani could have a war chest to grab a generous piece of it. If Mikitani can stand up to the competitive onslaught, Softbank Corp.'s Masayoshi Son won't be the only Japanese Net tycoon to make waves on far-off shores.

1. Rakuten 是一個什麼樣的網站？請說明其營運模式。 10%
2. 為何 Rakuten 的市價會這麼高？請說明其相關經營策略。 10%
3. 請簡述 Rakuten 創辦人的背景及其特質，與目前台灣在網路上創業成功的人有何異同？ 10%

考試科目 Course	企業管理學	系級 科學班	日期 Date, Period	4月23日	試題編號 第 節	Course No.
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飛利浦 (Philips)

荷蘭的飛利浦 (Dutch-based Philips) 是全球工業和消費電子產品生產者之一。它是一個行政權高度分散的公司，該公司期盼每個部門都有個環境績效的高標準和優先考慮環境效率。環境是少數有中心目標的領域之一，這些目標是：

- 遍及公司的可確認環境管理系統，(ISO14001/EMAS) 績效
- 西元 2000 年時能源消耗減少 25%
- 西元 2000 年時包裝材料的使用減少 15%

這個目標是根據試驗性專案和居於領導人位置的一般經驗，來自飛利浦內部與荷蘭和別處的其他公司的企業。它也花費相當多的時間考慮未來的環境趨勢，因此這些有關產品開發，和投資可以與現今的決策合併。

飛利浦特別強調從它的產器設計環境問題。飛利浦企業設計 (Philips Corporate Design) 資深主任史帝法諾·馬札諾 (Stefano Marzano) 相信有新的工業文藝復興——在最廣泛的觀點中，人類經驗在高科技社會中一再被評估，以真正的相關產品滿足我們真正的需要和期盼。

與此相關的部份是確保最小的環境衝擊。企業環境和能源辦公室 (Corporate Environmental and Energy Office) 已經開發一些境評估方法，增加產品設計者和開發者之間的意識。其中有些是簡單的和定性的，如一組「五個快速問題」(five fast questions)，這是使用於快速洞察重要的爭議和最佳走向。其他月釗列於核對清單，如一份強調禁令和妨礙的化學品和原料的清單。飛利浦也已經開發幾個定量工具，如考量用後產品的爭議，和一個生態指標的昂貴模式。後者是根據荷蘭政府贊助的研究而來的，這項研究是訂定一個潛在有害物質的逸散標準計算環境衝擊點數。因此，可以計算與比較一個產品，或是產品選擇的所有逸散物的總計點。

生態設計方法論已經協助創造許多產品，包括具環境效率的電視、新設計的磁共振顯影設備、無邊包裝、和新照明模式。

飛利浦音響和影像公司 (Philips Sound and Vision) 對它所製造的電視，和其他消費電子產品的最小的環境衝擊方面有長久的歷史。例如，它是第一個消除電視機溴化物火燄抑制劑的主要製造廠商。

1990 年代中期，該部門的艾達霍芬 (Eindhoven) 實驗室開發一個十四吋輕便的綠色環保電視 (Green TV)，這座電視是為漸漸應用到現存的模式範圍，而以實現環境效率意念為目標。這個設計幾乎是已經消除所有的危險材料，使得較輕和回收的材料得以延伸使用，比先前的模式使用的零組件減量 30%，與運作時的電力需求較少，而且使用過後的回數，可以很容易的拆卸和分離。整個模式所減少的終生能消耗是 40% 和 11% 的重量，對消費者和製造節省相當的成本，減少二分之一的用後處理成本。

飛利浦醫療系統 (Philips Medical Systems) 想要改善其磁共振影像設備的設計，以削減成本、增加價值、和減少環境衝擊。從該公司現存產品的一個生週期評析發現，主要的環境衝擊是在製造油壓和機械的零組件、使用階段中的材料需求的空運，和使用過後的設備處理，最後這項是必要的，因為產品包含混合材料而且可能不容易拆卸。

在以其他方法減少製造和使用成本與增加顧客價值的同時，一個交叉功能開發團隊考慮到如何可以減少這些衝擊。這支團隊是由來自不同的產品鏈代表所組成的，包括採購、產品開發和設計、製程開發、生產、行銷、與銷售，它也使用先前所提到的生態設計工具。

結果是已經有個產品的機械簡化，和以兩個小型電動馬達替代油壓系統，因此新設計的重量幾乎是其先前產品的一半，能源消耗也比較低，較容易拆卸和其他的環境設計特性意謂著這個設備比較容易回收。下一步則是發現環境較友善的儲存。

做為世界上最大的電化製品和消費電子產品製造廠商之一，飛利浦使用許多包裝材料——雖然比過去少了許多。促成這個創新的是，由開發包裝真空吸塵器的飛利浦國內家電製品 (Philips Domestic Appliances) 部門所開發的無邊盒。這個設計標準是維持或是加強產品的保護、「可疊放性」和運輸穩定性、可辨識確認、減少原料內容，回收原料的最佳使用，與完全和容易回收性。

結果演變出一個切成斜角而非直邊的盒子，這是個特殊而且原料需求減少 14% 的盒子，它減少採購成本，盒子的尺寸也由先前的多樣性減少為兩種。這種盒子所使用的厚紙箱是由 90% 的回收纖維製造，而且容易疊放和回數。

生態設計製程也容許飛利浦減少小型照明燈管的長度和直徑——相較於標準的二十六公釐燈管，它只有十六公釐。結果這個設計提供極大的設計自由，同時也減少玻璃、磷光劑塗層薄層、和水銀的使用。經由利用能提供較高照明效率的新超/80 磷光劑 (Super/80 Phosphor) 技術，照明標準仍然維持不變。這些燈管比傳統燈管更耐久並且減少維修。飛利浦打算持續改善其生態設計工具。但是該公司也想找出更多有關人們更具環境自覺的東西，和對生態設計產品有興趣。飛利浦企業能源與環境辦公室 (Corporate Energy and Environmental Office) 正和這個群體的其他部門回應這個問題，以製造該公司未來企業核心的高環境效率產品為最終目標。

1. 類似 Philips 的家電公司可從那幾方面做環保? 10%
2. 公司提高環境績效與優先考慮環境效率會不會增加成本或降低競爭力，為什麼? 10%
3. 就你的了解，企業管理中的各個功能性管理如：人力資源管理，生產管理，行銷管理，財務管理，資訊管理，和企業的環境生態管理與永續發展有何關係? 10%

考試科目 Course	行銷管理	卷數	第 1 卷	日期 Date, Period	4 月 23 日	頁數	第 1 頁	試題編號 Course No.
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6-5

國立政治大學圖書館

具環境效率的清潔劑

1989 年寶鹼公司名為 Ultra 配方的濃縮洗衣粉首次上市。這類商品因為結合一種濃度較高的產品，並減少 30% 的產品原料，通常要求消費者在使用洗衣粉時，只使用一半的份量或是比傳統洗衣粉少使用一些劑量，結果，這個使用量的洗衣粉，不但可使 30% 的包裝減量，和裝運能源減少，並在定量的洗衣量僅需散佈足夠的洗衣粉。事實上，寶鹼估計因為全球的濃縮洗衣粉介入傳統洗衣粉市場，交易需求量已減少 40%。

自從引進濃縮洗衣粉之後，Ultra 洗衣粉在製造和包裝上有更進一步的改善，資源效率方面也有額外的收穫。從「濕」移轉到「乾」的清潔劑產品的製程減少一半的能源需要，同時也減少水消耗量。現在在美國和歐洲已供應洗衣粉的塑膠補充包，它較傳統的紙箱減量 30% 的原料，而且在產品的裝運或是包裝上所需要的能源也比較少。包裝的內容也有 25% 的回收使用。在美國以外的地區，只販售以塑膠袋包裝的洗衣粉。

寶鹼使用生命週期清查，瞭解產品在整個生命週期中的大量能源和廢棄物的生產——從開始的原料抽取，到最後的產品和包裝的處理(註 15)。寶鹼的濃縮洗衣粉的生命週期提供多重的環境利益，有些利益並非立竿見影。舉例來說，如果每次都是使用較少的原料和包裝清洗衣物，則會減少原料的採掘、加工處理、和運輸。這個方法所需能源較少的，而且所產生的固體廢棄物也減量。

由寶鹼主導的一項根據美國的情況所做的洗衣粉生命週期研究指出，相較於傳統洗衣粉，Ultras 在每千次洗滌量中大約節省六十六萬四千的英制熱單位(British thermal units, Btu)能源，以及每年節省總計五百噸的固體廢棄物。在美國，如果所有的洗滌量都是以 Ultra 洗衣粉清洗，每年將節省相當於一億四千萬加侖(超過七十萬公升)汽油的能源，和減少相當於由七十六萬五千人一年所產生的固體廢棄物(註 16)。

1. 本文談的生命週期是什麼？和行銷管理談的產品生命週期有什麼不同？ 10%
2. 請列舉 Ultra 濃縮洗衣粉的產品創新產生那些環境效率？對 P&G 公司有什麼經濟效益？ 10%

THE VIRTUOSO ACCELERATOR

ICG is developing a nest egg of business-to-business Net companies.

There's more than one way to hatch a company, as Internet Capital Group proves. This internet investor grows startups without an "incubator" facility. And rather than try to play generalist, the firm is focused solely on the fast-growing field of business-to-business e-commerce. Its network of more than 40 companies cooperate and share resources, all overseen by ICG.

ICG is also based in Wayne, Pa., far from the typical venture capital enclave. Since its 1996 founding, it has operated as an extremely hands-on venture investor, guiding companies' strategies, recruiting management and maintaining daily contact with the CEOs.

One typical portfolio company is Breakaway Solutions, which provides application service provider and systems integration services. Going beyond boardroom advice, ICG helped Breakaway complete its management team and merge with another ICG partner company.

ICG is, if not a true incubator, a virtuoso accelerator. "We find a company early and invest like hell to build it," says Todd Hewlin, the company's managing director of corporate strategy. Essentially, the firm plucks young companies from the early-stage treadmill and then uses its machinery to build them up into powerful portfolio companies—the way Hollywood used to anoint unknown actors and turn them into stars.

The firm has identified what it believes will be the 50 top business-to-business markets, and it looks for companies that can be leaders in each market, such as telecommunications or systems integration. While ICG has been savvy in the startups it picks, observers say its real strength is its ability to grow these companies.

VerticalNet is a perfect example. ICG invested in this company when it was Water Online, a content and community site for the municipal water system industry. ICG helped recruit Chief Executive Mark Walsh and expand the company into other vertical business marketplaces. Now, VerticalNet is a public company worth nearly \$2 billion, offering Water Online and more than 40 other online trade communities, including Bakery Online and Chemical Online.

Because ICG is structured as a holding company—not an investment firm—it has greater operational flexibility. And since the company went public this summer, it has become a true Wall Street darling. On Aug. 5 the stock opened at \$12 a share, and on Oct. 21 its stock closed at \$100.69, for a 739 percent rise in less than three months. Its market capitalization of more than \$22 billion (as of Nov. 97) is even larger than the better-known Internet holding company CMGI.

That's because business-to-business is seen as the next big thing on the Internet, much bigger than the business-to-consumer market (see "Dawn of the Digital Marketplace," November 1999, page 124). And ICG is a one-stock proxy for this huge potential. "The ICG guys are extremely sharp. They were very early in spotting this," says Eric Upin, an analyst at Robertson Stephens, an investment bank that helped take ICG public. "It is a juggernaut stock."

ICG has long known the strategy it wants to pursue, and an integral part of the plan is being a buy-and-hold investor that's in it for the long haul. "We're not about financial investment. We're about operations," Hewlin says. "What we're trying to create is the dominant business-to-business holding company." —L.J.

Internet Capital Group (ICG)

ICG is a holding company for business-to-business e-commerce companies, roughly separated into vertical market makers and infrastructure service providers.

Founded: 1996

URL: www.internetcapital.com

Number of employees: 40

Exchange/symbol: Nasdaq/ICGE

Shares outstanding: 122.6 million

Market valuation: \$22 billion*

* As of 11/22/99

國立政治大學

1. ICG 是一家什麼公司？請描述其營運模式。

10%

2. 請說明二家 ICG 輔導成功的公司，他們各是做什麼的？ICG 又提供了那些助力？

10%

考試科目 Course	經濟學 (甲)	系數	經濟所	日期 Date, Period	月	日	試題編號 Course No.
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共 2 頁 2-1

經濟學 (甲)

注意事項：

1. 請將答案按 (1) 至 (20) 的次序填入答案卷，每題 5 分。
2. 都是簡答題，答案應力求精簡，先寫出最終答案（數值、符號或 是、否），再儘量輔以圖表或方程式來說明。

一、在某產品的市場上，有十個消費者，每個人只買一個產品，他們所願意付的價錢分別是 [8, 9, 8, 6, 7, 5, 3, 4, 2, 7]，市場上也有十個供應者，每個人只賣一個產品，他們的成本分別是 [5, 4, 3, 6, 7, 8, 9, 3, 2, 9]。消費者及供應者彼此不談論價錢，而是由一位喊價者喊出市場價格，合者留不合者去。如果需求和供給的量不同，喊價者必須再喊出新的市場價格，直到需求和供給的量一致。

請問 (1) 均衡的市場價格為何？(2) 交易量是多少？

- 二、請用圖形及符號說明 (3) 何謂規模經濟？
- (4) 何謂學習曲線？
- (5) 這兩種現象是獨立或相關的？

- 三、請用社會成本效益分析圖，說明 (6) 為何政府一定要介入科技發展？
- (7) 補助企業研發與設立工研院這兩種政策分別有什麼效果？

四、假設產業中的每一個廠商有相同的邊際成本曲線 $MC = c$ ，產業的需求曲線是 $P = a - bQ$ 。請問在以下各種市場結構下，均衡的價格 P 、產業產量 Q 、各個廠商的產量及利潤 分別是多少？

(8) 完全競爭 (9) 獨佔 (10) Cournot 雙占 (11) Bertrand 雙占

- 五、請用 (8) 至 (10) 的答案來說明
- (12) 為何「完全競爭」時可達到社會最適的結果？

六、沒有水我們活不下去，但 (13) 為什麼它卻比鑽石便宜？難道市場機制就是如此的無知嗎？不會考慮價值？

我們投入巨資，花了許多人工，辛辛苦苦生產出來的產品，(14) 為什麼竟然只能賠本求售？難道市場機制就是如此的無情嗎？一點也不考慮成本？

請儘量用圖形來說明。

七、假設台積電與聯電在晶圓代工上有秘密協議。在接單時，兩公司都可決定遵守或違反這個協議；依據兩公司的決定，其報酬矩陣如下：

報酬 (台積電, 聯電)	台積電 遵守	台積電 違反
聯電 遵守	(657, 620)	(735, 350)
聯電 違反	(410, 680)	(505, 430)

請問 (15) 在只玩一次的狀況下，穩定的均衡解為何？為什麼？

八、越南技術水準較差，不論生產什麼產品，成本都比台灣高。

生產成本 (人工小時)	越南	台灣
布	10	5
米	20	15

請問 (16) 兩國間還需要國際貿易嗎？

九、要生產 1000 公噸的鐵有四種不同的製程技術。

技術	甲	乙	丙	丁
投入因素				
資本	120	100	80	20
人力	3	2	5	10

請問 (17) 對美國而言，經濟上最適的技術是什麼？為什麼？

(18) 對印尼而言，經濟上最適的技術是什麼？為什麼？

十、假設某國的國民所得帳資料如下：

進口	102	民間消費支出	108
出口	154	政府消費支出	32
間接稅	28	政府對企業補助	2
公賣利益	30	國內資本形成毛額	72
未分配盈餘	9	國內資本形成淨額	54
受雇人員薪資	131	公司營利事業所得稅	11

請問 (19) GNP 是多少？

十一、你是一個有理工背景的人，比絕大多數的經濟學家都更懂得最新的科技及其原理。(20) 為什麼只因為要做一個科技管理者，就得要學「經濟學」呢？

以下每一題各為十分，請把握時間作答。

共1頁

1. 求極限 $\lim_{n \rightarrow \infty} (\sqrt{n + \sqrt{n + \sqrt{n}}} - \sqrt{n}) = ?$
2. Suppose that f is a function satisfying:
 $e^x \leq f(x) \leq e^x + x^2$ for $|x| < \frac{1}{10}$, Find $f'(0)$.
3. 試以微積分的知識作 $f(x) = \frac{x^2 - 4}{x^2 - 9}$ 之圖。
4. 求級數 $\sum_{n=1}^{\infty} \frac{n^2}{n!}$ 之和。
5. 曲線 $y = x^2$ 與曲線 $y = 1 + (x \cdot \cos x) - \sin x$ 有幾個交點？
試證之。
6. 求內接於半徑為 r 之球面的正圓錐體，其最大可能之體積。
7. 某車以 88 呎/秒等速直線前進，於離河岸 100 呎處以
速度函數 $v(t) = 88 - 44t$ 制動 (Brake) 減速，請問此車是否
能於進入河中前停止？若能，距離多少？
8. 求 $\int \frac{dx}{(1+e^x)^2} = ?$
9. 計算曲線 $y = \sin x$ 與 $y = \sin 2x$ ，在 $x=0$ 至 $x=\pi$ 之間所圍
成之平面區域面積。
10. 請舉例說明微積分可以應用在服務業之處。

考試科目 Course	經濟學	系級	科管所 乙組	日期 Date, Period	月	日	試題編號 CourseNo.
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經濟學 (乙)

共 2 頁 2-1

注意事項：

1. 請將答案按 (1)·(2) 至 (20) 的次序填入答案卷，每題 5 分。
2. 都是簡答題，答案應力求精簡，先寫出最終答案 (數值，符號 或 是、否)，再儘量輔以圖表或方程式來說明。

一、在某產品的市場上，有十個消費者，每個人只買一個產品，他們所願意付的價錢分別是 [8, 9, 8, 6, 7, 5, 3, 4, 2, 7]。市場上也有十個供應者，每個人只賣一個產品，他們的成本分別是 [5, 4, 3, 6, 7, 8, 9, 3, 2, 9]。消費者及供應者彼此不談論價錢，而是由一位喊價者喊出市場價格，合者留不合者去。如果需求和供給的量不同，喊價者必須再喊出新的市場價格，直到需求和供給的量一致。

請問 (1) 均衡的市場價格及交易量為何？(2) 消費者剩餘是多少？

二、請用圖形及符號說明 (3) 何謂規模經濟？

(4) 何謂學習曲線？

(5) 這兩種現象是獨立或相關的？

三、請用福利經濟學及高斯的理論 (Coase Theorem) 來分析

(6) 解決環境污染問題一定要政府介入嗎？

(7) 政府一定要介入科技發展嗎？

四、假設產業中的每一個廠商有相同的邊際成本曲線 $MC = c$ ，產業的需求曲線是 $P = a - bQ$ 。請問在以下各種市場結構下，均衡的價格 P 、產業產量 Q 、各個廠商的產量及利潤 分別是多少？

(8) 完全競爭 (9) 獨佔 (10) Cournot 雙占 (11) 合作雙占

(12) Bertrand 雙占 (13) Stackelberg 雙占

五、請用 (8) 至 (11) 的答案來說明

(14) 哪一種市場結構經濟效率最高？為什麼？

(15) 為何廠商總是有動機想要合作勾結？

六、沒有水我們活不下去，但為什麼它卻比鑽石便宜？我們投入巨資，花了許多人工，辛辛苦苦生產出來的產品，為什麼竟然只能賠本求售？難道市場機制就是如此的無知與無情嗎？既不懂得價值也不考慮成本？

(16) 請用圖形來說明。

考試科目 Course	經濟學(乙)	系級	科班管理 研究所	日期 Date, Period	月	日	試題編號 Course No.
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2-2

國立政治大學圖書館

七、假設台積電與聯電在晶圓代工上有秘密協議。在實際經營上，每次接單兩公司都可決定遵守或違反這個協議；依據兩公司的決定，其報酬矩陣如下：

報酬 (台積電, 聯電)	台積電 遵守	台積電 違反
聯電 遵守	(657, 620)	(735, 350)
聯電 違反	(410, 680)	(505, 430)

請問 (17) 在永續經營的狀況下，穩定的均衡解為何？為什麼？

八、越南技術水準較差，不論生產什麼產品，成本都比台灣高。

生產成本 (人工小時)	越南	台灣
布	10	5
米	20	15

請問 (18) 兩國間還需要國際貿易嗎？

九、要生產 1000 公噸的鐵有四種不同的製程技術。

技術	甲	乙	丙	丁
投入因素				
資本	120	100	80	20
人力	3	2	5	10

請問 (19) 對美國和印尼而言，經濟上最適的技術分別是什麼？為什麼？

十、假設某國的國民所得帳資料如下：

進口	102	民間消費支出	108
出口	154	政府消費支出	32
間接稅	28	政府對企業補助	2
公賣利益	30	國內資本形成毛額	72
未分配盈餘	9	國內資本形成淨額	54
受雇人員薪資	131	公司營利事業所得稅	11

請問 (20) GNP 和 NI 分別是多少？

(20)

1. The filling machine for a production operation must be adjusted if more than 8% of the items being produced are underfilled. A random sample of 80 items from the day's production contained nine underfilled items.

(a) Does the sample evidence indicate that the filling machine should be adjusted? Use $\alpha = .02$

(b) Find the p -value

(c) Find the power of the test in (a) when actually 10% of the items being produced are underfilled.

(d) Construct a 99% C.I. for the true proportion, π , of underfilled items.

2. A firm is studying the delivery times of two raw material suppliers. The firm is basically satisfied with supplier A and is prepared to stay with that supplier if the mean delivery time is the same as or less than that of supplier B. However, if the firm finds that the mean delivery time of supplier B is less than that of supplier A, it will begin making raw material purchases from supplier B.

(15)

(a) What are the null and alternative hypotheses for this situation?

(b) Assume that independent samples show the following delivery time characteristics for the two suppliers.

supplier A	supplier B
$n_1 = 15$	$n_2 = 12$
$\bar{x}_1 = 14$ days	$\bar{x}_2 = 12.5$ days
$s_1 = 3$ days	$s_2 = 2$ days

With $\alpha = .05$, what is your conclusion for the hypotheses from part (a)?

(c) What assumptions must be made in performing the test in (b)?

3. Three suppliers provide the following data on defective parts.

(10)

Supplier	Part Quality		
	Good	Minor Defect	Major Defect
A	90	3	7
B	170	18	7
C	135	6	9

Use $\alpha = .05$ and test for independence between supplier and part quality. What does the result of your analysis tell the purchasing department?

4. An experiment has been conducted for four treatments with eight blocks. Complete the following ANOVA Table.

(15)

Source of Variation	df	SS	MS	F
Treatments		900		
Blocks		400		
Error				
Total		1800		

Using $\alpha = .05$, test for any significant differences.

5. "Do big-budget motion pictures bring in big money at the box office"? To answer this question, a regression analysis was performed with budget as the independent variable and gross sales as the dependent variable. Using the partial computer printout below, answer the following questions.

(20)

- (a) What is the estimated regression equation
- (b) What is the coefficient of determination
- (c) What is the value of the standard error of estimate?
- (d) Conduct a t -test at a .05 level of significance
- (e) Conduct an F -test at a .05 level of significance
- (f) Discuss the relationship between budget and gross sales in the motion picture industry. What does the regression analysis tell the producers who favor big-budget motion pictures?

Predictor	Coef	Stdev	t ratio
Constant	50.43	80.995	
Budget	1.172	1.804	

s = 73.21 R-sq = _____

Analysis of Variance

SOURCE	DF	SS	MS	F
Regression	1	2188		
Error	8	45258		
Total	9			

6-4

國立政治大學圖書館

6. The admissions officer for Clearwater College developed the following estimated regression equation relating final college GPA to the student's SAT mathematics score and high-school GPA.

$$\hat{y} = -1.41 + .0235 X_1 + .00486 X_2$$

- where
- X_1 = high-school GPA
 - X_2 = SAT Mathematics score
 - y = final college GPA

(20) A portion of the Minitab computer output follows.

The regression equation is
 $Y = -1.41 + .0235 X1 + .00486 X2$

Predictor	Coef	Stdev	t-ratio
Constant	-1.4053	0.4848	
X1	0.023467	0.008656	
X2		0.001077	

s = 0.1298 R-sq = _____ R-sq(adj) = _____

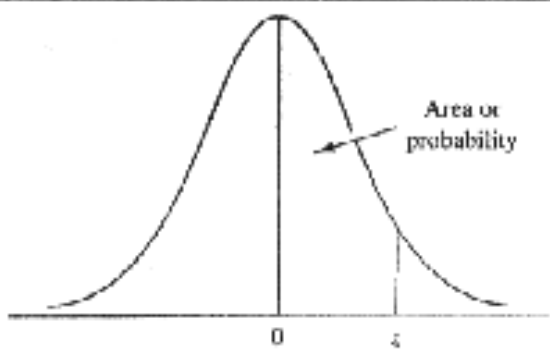
Analysis of Variance

SOURCE	DF	SS	MS	F
Regression	_____	1.76209	_____	_____
Error	_____	_____	_____	_____
Total	9	1.88300		

- Complete the missing entries in this output.
- Compute F and test at a .05 level of significance to see whether a significant relationship is present.
- Did the estimated regression equation provide a good fit to the data? Explain.
- Use the t test and $\alpha = .05$ to test $H_0: \beta_1 = 0$ and $H_0: \beta_2 = 0$.

Standard Normal Distribution

6-5

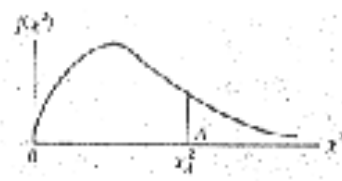


Entries in the table give the area under the curve between the mean and z standard deviations above the mean. For example, for z = .25 the area under the curve between the mean and .25 is .3944.

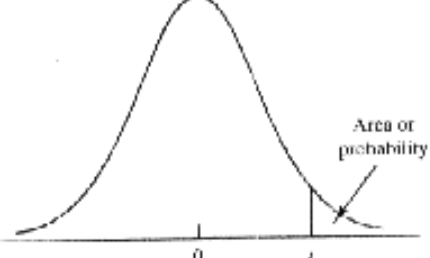
z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4725	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4986	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

中正政治大學圖書館

Critical Values of χ^2



DEGREES OF FREEDOM	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.850}$	$\chi^2_{.800}$	$\chi^2_{.750}$	$\chi^2_{.700}$	$\chi^2_{.650}$
1	0.000393	0.0001571	0.0009821	0.0039321	0.0157908	2.70554	3.84146	5.02389	6.63490	7.87944
2	0.0100251	0.0201007	0.0506356	0.102587	0.210720	4.60517	5.99147	7.37776	9.21034	10.5966
3	0.0717212	0.114932	0.215795	0.351846	0.584375	6.25139	7.87973	9.34840	11.3449	12.8381
4	0.206990	0.297131	0.484419	0.710721	1.063623	7.77944	9.48773	11.1433	13.2767	14.8602
5	0.471740	0.554300	0.831217	1.145476	1.61031	9.23635	11.0705	12.8325	15.0863	16.7501



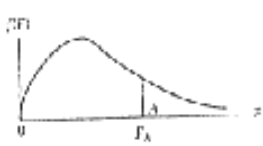
6
6-6

Entries in the table give t values for an area of probability in the upper tail of the t distribution. For example, with 10 degrees of freedom and a .05 area in the upper tail, $t_{.05} = 1.812$.

Degrees of Freedom	Area in Upper Tail				
	.10	.05	.025	.01	.005
1	2.078	6.314	12.706	31.821	63.657
2	1.886	2.920	4.303	6.965	9.525
3	1.638	2.353	3.182	4.541	5.841
4	1.533	2.132	2.776	3.747	4.604
5	1.476	2.015	2.575	3.365	4.032
6	1.440	1.943	2.447	3.143	3.707
7	1.415	1.895	2.365	2.998	3.499
8	1.397	1.860	2.306	2.896	3.355
9	1.383	1.833	2.262	2.821	3.250
10	1.372	1.812	2.228	2.764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.053
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771

國立政治大學圖書館

Percentage Points of the F Distribution, $\alpha = .05$



ν_2	ν_1	NUMERATOR DEGREES OF FREEDOM								
		1	2	3	4	5	6	7	8	9
1	1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5
2	1	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38
3	1	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81
4	1	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00
5	1	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77
6	1	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10
7	1	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68
8	1	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39
9	1	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18
10	1	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02
11	1	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90
12	1	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80
13	1	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71
14	1	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65
15	1	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59
16	1	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54
17	1	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49
18	1	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46
19	1	4.36	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42
20	1	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39
21	1	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37
22	1	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34
23	1	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32
24	1	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30

考試 科目	企業管理學	卷數	第 1 卷	日期	9 月 23 日	試題 號碼	第 6 頁
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第 6 頁 (6-1)

閱讀個案後請回答各個案後的問題

華之政治大學圖書館

Is This Man Building the Amazon.Com of Asia?

Business Week; New York; February 21, 2000; Irene M. Kunii in Tokyo;

When Hiroshi Mikitani launched an online shopping venture three years ago, few Japanese retailers were ready to bet on the Internet as the Next Big Thing. Only 5 million Japanese used the Net then, mostly for mail, and a handful of corporate giants controlled the e-commerce that did exist.

His gamble paid off. With online retailing now taking off, Mikitani has emerged as Japan's king of e-commerce. His cybermall, Rakuten, has grown from 13 shops in 1997, to 2,000 retailers ranging from major department stores to fishmongers and sake brewers. It also boasts 600,000 registered shoppers lured by aggressive pricing and ever-evolving services. More impressive, Mikitani's Rakuten Inc. is profitable: In 1999, the private company earned profits of \$2.4 million on sales of \$5.7 million. "We're on our way to becoming the first homegrown e-commerce success," says Mikitani, 34, whose usual garb--a polo shirt and khaki pants--makes him resemble a Silicon Valley transplant.

NOTHING LESS. Now, the stage is set for Mikitani's bid to join the ranks of new Net moguls. In a highly anticipated initial public offering, he will float a chunk of Rakuten in April on Nasdaq, Tokyo's over-the-counter bourse. With the \$100 million analysts figure he can raise, Mikitani plans to add new services and expand beyond Japan. "Investors are looking for Internet companies with a more substantial track record, and Rakuten has substance," says Rowe Price-Fleming International Inc. fund manager Ian Macdonald, who thinks

highly anticipated initial public offering, he will float a chunk of Rakuten in April on Nasdaq, Tokyo's over-the-counter bourse. With the \$100 million analysts figure he can raise, Mikitani plans to add new services and expand beyond Japan. "Investors are looking for Internet companies with a more substantial track record, and Rakuten has substance," says Rowe Price-Fleming International Inc. fund manager Ian Macdonald, who thinks the IPO will do well.

Mikitani's ambition is to become nothing less than Amazon.com and eBay rolled into one, offering both online hub and auction services. Rakuten wants to set up in South Korea, Singapore, and Taiwan--and open its first foreign-language site for Asian shoppers by yearend. He also plans to acquire e-biz companies in Japan and abroad that could enhance his business.

First, of course, Mikitani must keep up the momentum at home. So far, his main rivals have been sluggish giants like trading house Mitsui & Co., which operates Curio City, a 700-shop cybermall. But now, investment firms like NetAge also are launching e-business outfits. "He'll face challenges from rivals ready to undercut his prices," says NetAge President Kiyoshi Nishikawa. "The test will be whether he can take his business model to another level."

So far, Mikitani's acumen has been impeccable. He learned about investment banking during a stint at Industrial Bank of Japan and about entrepreneurship at Harvard Business School, where he earned an MBA in 1993. He also founded a merger-and-acquisition consultancy, Crimson Group, using the proceeds to launch Rakuten.