

EERSTE DEELTENTAMEN INLEIDING GEGEVENSVERWERKING

Faculteit der Exacte Wetenschappen – Vrije Universiteit – 27 maart 2007 – 12.00-14.00

Er mogen geen hulpmiddelen (rekenmachines, formulebladen e.d.) gebruikt worden bij het beantwoorden van de vragen. Geen antwoorden op dit vragenblad schrijven. Alleen antwoorden op tentamenpapier worden nagekeken. Succes!

Eindcijfer = ((totaal / 32) * 9) + 1

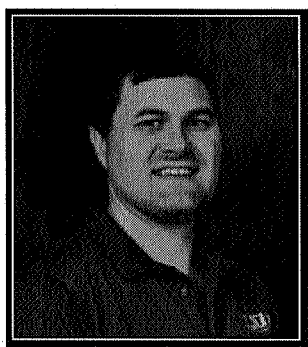
Open vragen (20 punten)

Lees nauwkeurig de volgende tekst over een alternatief op aandelenhandel.

Kansas City undercuts NYC Pricing is at the heart of the success of the start-up BATS Trading

February 9, 2007

While the two behemoths [2 grootste bedrijven] in US equities exchanges go head to head in the battle for volumes, a Midwestern upstart called BATS Trading [Better Alternative to Trading Systems] is enjoying striking success on the sidelines. Kansas City-based BATS, which is just over a year old, has exploited a high-speed trading platform and cut-throat pricing to attract about 10 per cent of the order flow of "matched bargains" - both sides of a trade - in Nasdaq-listed shares. Its success in a market long dominated by the New York Stock Exchange and Nasdaq challenges the conventional wisdom that ex-changes are natural monopolies. And BATS is not alone in trying to take market share from the big two. Challengers for a piece of the expanding US equity business are emerging almost weekly. In January, thanks to a pricing policy in which it in effect paid customers to trade on its platform, BATS captured volumes of more than 300 million per day and there are signs that customers have stayed. Pricing is at the heart of the start-up's success. Fees are far below those of any alternative trading system. It charges customers who lift orders from its system 26 dollar cents per 100 shares but offers a rebate of 24 dollar cents to those posting. "It takes a long time to change people's behavior unless you give them a good economic reason for it," says Dave Cummings, chief executive. "The economics of the trading business are that you lose



Dave Cummings

money until you get to a certain critical mass." Plenty of critics say BATS's success will be short lived. Jerry Putnam, president and co-chief operating officer of the NYSE, says: "As I look at the BATS pricing model, it is obviously losing money on every trade. It is not a sustainable business model program." But BATS disagrees. It says it raised prices in February without losing market share. "We want to run BATS as a semi-profitable utility," Mr Cummings says. "We don't want to gouge [te hoge prijs vragen] our customers to maximize our shareholders." It plans to expand its offering and will not be

limited to its home market. That could prompt Europe's exchanges, which have not felt the chill wind of competition, to take notice. New European regulations that take effect in November aim to encourage such competition. BATS this week said it would expand its base from Nasdaq-listed stock to that on the NYSE, although it will target Nasdaq's share of NYSE securities rather than take on the latter exchange directly. Analysts who track ex-changes say the early success of BATS is surprising not only for its speed but also for the fact that the cost of creating it was so low. "The success at BATS during its first year has been noteworthy and is even more impressive given how little it has cost the company to establish a meaningful market position," analysts at Raymond James write in a recent report. "We believe the company's flexibility and innovation will continue putting pressure on the exchanges." Mr Cummings says the desire to drive price competition was what spurred him to set up the company. The only threat to the US duopoly had been Electronic Crossing Networks, the high-speed electronic platforms that allow share bargains to be matched at tariffs well below those of either large exchange. But in 2005, after both exchanges lost market share to the ECNs - Nasdaq was worse hit - each bought the most successful operators in the field. The NYSE bought Archipelago, Nasdaq INet and Brut. In a single swoop, competition disappeared, Mr Cummings says. "After 2005, we felt it was an unhealthy situation. BATS was specifically created to re-establish competition in the US market." Mr Cummings's background was as a customer, not a platform provider. A graduate of Purdue University with a degree in computer science, he became a trader of wheat futures on the Kansas City Board of Trade. "I had this idea that you could invent a robot to trade wheat futures." Before long, he turned his hand to just that, building TradeBot, an electronic model for share trading. Rather than rely on fundamentals, he built a system that relied on mathematical formulas to send trading instructions. Increasingly, securities markets experts say, it is liquidity providers such as TradeBot that have come to dominate the world of high-speed electronic trading, as volumes in the world's stock and derivatives exchanges soar. TradeBot was a customer of INet and Brut and their disappearance into Nasdaq galvanized Mr Cummings to launch a competitor. Similar firms, controlled by like-minded individuals, became his customers and several invested. Among these are Lime Securities and Getco, two of the largest volume traders in Nasdaq and NYSE-listed stocks. The entire BATS system, he says, was built for less than 2 million Dollars and the company has spent no more than 14 million Dollars all in. And it is attracting new capital faster than it can spend it, he adds. More to the point, Mr. Cummings has become very wealthy himself and has no interest in turning BATS into a profit-driven behemoth like its two largest competitors. Indeed, the BATS model is more akin to the mutually owned NYSE as it was than to the shareholder-owned exchanges of today. Ironically, that model is also being reappraised in Europe, where investment banks have vowed to club together to form a trading platform that will do for them what BATS is doing in the US.

Mr Cummings believes that, once a low-cost provider has established critical mass in a single market, any other participant will have to adjust. "Anything higher will be dead on arrival," he says.

Vraag 1 (5 punten)

Analyseer van de voorgaande case het werksysteem volgens de methode die in het boek van Steven Alter wordt beschreven.

Vraag 2 (3 punten)

Wat voor soort informatiesysteem is het BATS systeem? Geef in je antwoord ook aan om welk type van de gekozen soort het gaat.

Lees nauwkeurig de volgende tekst:

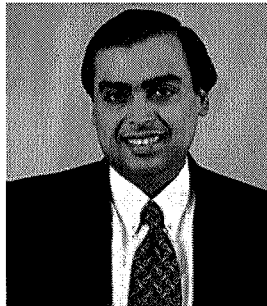
When 400,000 apply for the job

October 20, 2006

For India's largest companies, scaling up operations to the size Mukesh Ambani envisages in the retail sector takes more than just capital – it requires tens of thousands of qualified staff. The problem is acute in a sector such as organised retail, which will have to compete for a similar talent pool with established industries such as banking. "There aren't enough good people to be running these businesses, especially of this scale," says Ranjan Biwas of Ernst & Young. Yet India's new retailers can take lessons from other sectors in managing the talent issue. ICICI Group, which owns India's largest private bank, two large insurance companies and a brokerage, is used to large-scale recruitment - it expects to add 30,000 to 40,000 employees a year for the next three to five years as it expands into new areas of India's underdeveloped financial market. The group receives 400,000 CVs a year through an internet portal, which automatically filters them down to 100,000 before dividing them into different "buckets" according to a candidate's education, skills and experience. K. Ramkumar, head of human resources at ICICI, says the group tests candidates online before calling in a staggering 50,000 to 60,000 for face-to-face interviews. Tata Consultancy Services, the country's largest



TATA CONSULTANCY SERVICES



information technology outsourcing company, added 8,919 people in the past quarter, bringing its total workforce to 78,028 people. S. Padmanabhan, global head of human resources at TCS, says making an offer to a candidate is far from the end of the process: "The demand is so much that the candidate usually has more than one offer in hand at any time." This means the company has to be innovative to ensure the candidate is hired, even going so far as sending birthday greetings to potential recruits to make them "feel welcome".

Mukesh Ambani (zie: http://en.wikipedia.org/wiki/Mukesh_Ambani)

Vraag 3 (6 punten)

Wat zou je advies zijn aan TCS over het implementeren van de functionaliteit van een recruitment systeem zoals in bovenstaande case beschreven wordt? Er zijn meerdere goede antwoorden mogelijk.

Vraag 4 (6 punten: 2+2+2)

- Leg uit wat een context diagram is.
- Geef een context diagram voor het recruitment systeem, uitgaande van de informatie die in de voorgaande case verstrekt is.
- Uitgaande van de informatie in de case, ontbreken er dan nog elementen in het context diagram? Zo ja, welke elementen zijn dat?

Multiple Choice vragen (12 punten)

Vermeld je antwoorden op je antwoordenblad bij je overige antwoorden. Niet op dit blad!

Vraag 5 (1 punt)

De gegevenskwaliteit van het BATS systeem wordt bekeken door naar de volgende zaken te kijken:

- A accuraatheid, bron, encryptie, formaat, compleetheid, beschikbaarheid
- B precisie, leeftijd, toegankelijkheid, toegangsrestrictie, betrouwbaarheid
- C tijdigheid, accuraatheid, bron, precisie, volledigheid, leeftijd
- D granulariteit, volledigheid, precisie, betrouwbaarheid, formaat, leeftijd, beschikbaarheid

Vraag 6 (1 punt)

Welke van de volgende zaken is het belangrijkste in de beoordeling van BATS door de klanten van BATS?

- A kwaliteit
- B betrouwbaarheid
- C snelheid
- D kosten

Vraag 7 (1 punt)

Personen die de toegevoegde waarde uitvoering van een organisatie doen zijn typische gebruikers van een:

- A TPS
- B office automation systems
- C communicaton systems
- D execution systems

Vraag 8 (1 punt)

Wat is de rol van ER-diagrammen in data modellering?

- A implementatie van een informatiesysteem
- B communicatie met de klant
- C gezamenlijke begripsvorming
- D ontwerpen van een database

Vraag 9 (1 punt)

Het geheel van een bedrijf dat nauw de banden met leveranciers coördineert heet:

- A Satisfied Customer management
- B Satisfied Customer marketing
- C Satisfied Chain management
- D Supply Chain management

Vraag 10 (1 punt)

De waardeketen bevat alleen:

- A primaire processen
- B ondersteunende processen

- C zowel primaire als ondersteunende processen
- D ketenprocessen

Vraag 11 (1 punt)

Welk bedrijf heeft een clicks & bricks e-commerce business model?

- A Amazon (boekhandel)
- B Bol.com (boekhandel)
- C VU Boekhandel (boekhandel)
- D BATS (financieel)

Vraag 12 (1 punt)

Wat is een recency effect?

- A teveel gewicht geven aan de eerste informatie
- B teveel gewicht geven aan de laatste informatie
- C teveel gewicht geven aan het eigen oordeel
- D teveel gewicht geven aan andermans oordeel

Vraag 13 (1 punt)

Een web pagina is een voorbeeld van een:

- A hypertext database
- B text/image database
- C flash database
- D geen van allen

Vraag 14 (1 punt)

Online analytical processing (OLAP) is:

- A real-time verwerken van analyses
- B massale verwerking van real-time gegevens
- C analyses van massale transactiegegevens
- D analyseren van real-time processen

Vraag 15 (1 punt)

Het vastleggen van de klantwensen is de stap van customer cycle involvement

- A retirement
- B maintenance
- C requirement
- D acquisition

Vraag 16 (1 punt)

Een gestructureerde verzameling van data elementen opgeslagen, beheerd en benaderd via een computer gebaseerd op een voorgedefinieerde relaties tussen voorgedefinieerde types van data elementen gerelateerd aan een specifiek probleem wordt genoemd:

- A DBMS
- B datastructuur
- C database
- D data dictionary