MSc Business Analytics – Exam 1 – Student 6

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Instructions:

Answer ALL questions. Use clear analytical reasoning, cite frameworks where relevant (e.g., network-effects taxonomy, AI adoption S-curve). Time allowed: 120 min.

Question 1:

“Here in – we will mostly start start-ups (or emerging companies) and already consolidated entities, which will use well-known innovation models based on projects.”

Answer:

Both start-ups and established firms often rely on tried-and-tested project-based innovation frameworks—whether Agile sprints or Stage-Gate processes—to manage uncertainty and align experiments with strategic objectives. Start-ups leverage these models to rapidly validate hypotheses and pivot, while incumbents use them to institutionalize continuous improvement without disrupting core operations. This dual use highlights the importance of tailoring the cadence and governance of innovation projects to an organization’s size and culture. Ultimately, project-based approaches reduce risk and accelerate learning by embedding iterative feedback loops into development cycles.

Question 2:

“Furthermore, the relevance of these enhanced capabilities makes it easier for such products to leverage and benefit from other networks.”

Answer:

When a platform augments its core functionality—say, by adding advanced recommendation algorithms or real-time analytics—it not only improves user experience but also unlocks complementary network effects. For example, richer personalization draws more engaged users, which in turn attracts third-party developers and advertisers seeking that engaged audience (indirect effects). This compounding dynamic mirrors Van Alstyne et al.'s multi-sided platform model, where each participant group reinforces another. By strategically enhancing capabilities, firms can catalyze new partnership ecosystems and deepen the value delivered to all stakeholders.

Question 3:

"Furthermore, indirect network effects can incentivize the addition of complementary products or services (Church & Gandal, 1992; Church et al., 2008; Katz & Shapiro, 1992; Rochet & Tirole, 2003, 2006; Schilling, 2002)."

Answer:

Indirect network effects occur when growth on one side of a platform—users—attracts complementary participants—developers, advertisers, or service providers—whose presence further increases user value. The classic example is Microsoft Windows: a large PC installed base induced software developers to build compatible applications, which in turn drew more users. Rochet & Tirole formalize this as a two-sided market, where pricing and incentives must be calibrated to balance the interests of both sides. Recognizing and nurturing these cross-side feedback loops is critical to sustaining platform leadership.

Question 4:

"In its virtual format today has great importance to the point that some risk in-cluso life to increase their virtual reputation."

Answer:

Technology evolves at the pace of engineering, driven by capital, talent, and cross-functional teams pushing the technological frontier. However, broad diffusion and adoption follow a social process—an S-curve—shaped by applicability, competitive intensity, market norms, and organizational culture. While individual users can adopt zero-friction tools almost instantly, enterprise uptake requires reconfigured KPIs, revised workflows, and formal change management. These organizational shifts only accelerate under high competitive pressure or within agile start-ups. Hence, engineering velocity and social adoption operate on distinct timelines.

Question 5:

“Something similar happened with bank employees dedicated to counting tickets in the box: they ended up transforming financial and commercial advisors.”

Answer:

As automation took over transactional tasks—such as tallying deposits—bank tellers and clerks were freed to focus on advisory roles, leveraging their financial expertise for personalized service. This transition exemplifies digital augmentation: technology assumes routine work, while humans apply judgment and relationship skills. Banks that embraced this shift saw productivity rise and customer satisfaction improve, as advisors offered value-added products rather than simply processing transactions. The redefined roles also required new training programs, illustrating how automation can catalyze workforce upskilling.

Question 6:

“Of course, it would be great to know – but we cannot, all the predictions that I heard, and based on which we will anticipate a great impact of a technology, are vain speculation.”

Answer:

Forecasting disruptive breakthroughs often succumbs to hype cycles: early promises inflate expectations before real-world limitations surface, leading to the “trough of disillusionment.” While scenario planning can map potential futures, actual emergence of game-changing technologies hinges on unpredictable recombinations of science, market demand, and regulatory shifts. This unpredictability underscores the value of real-options thinking—investing incrementally in multiple avenues—over all-in bets on singular “next big things.” In practice, resilient firms balance exploratory R&D with flexible adaptation strategies.

Question 7:

“The maximum exponent of this position would be monopoly or oligopoly, where it is the organization – and not the market – who controls the strategy, chooses price and offer.”

Answer:

A network can generate potential network effects merely by its size and design, but these externalities remain dormant until activated by enabling artifacts—data-products. For example, a telephone network only delivers value when users have handsets and a directory; otherwise, connectivity potential remains unrealized. Similarly, LinkedIn’s underlying professional graph only produces real communication effects once the messaging feature is implemented. By distinguishing network externalities (latent) from network effects (realized), managers learn to invest strategically in the right data-products to turn potential into tangible platform value.

Question 8:

“Forbes, https://www.forbes.com/sites/esade/2019/01/10/from-competing-on-analytics-to-companies-as-code/ Barro, S., & Davenport, T.”

Answer:

Barro & Davenport argue that leading firms have evolved into “companies as code,” embedding algorithms and analytics into every business process. The referenced Forbes article illustrates how organizations leverage data pipelines and machine learning models not just for decision support but as core products. This paradigm shift elevates software architecture and data governance to strategic assets, blurring boundaries between technology and business. To compete effectively, firms must cultivate engineering culture and robust data stewardship alongside traditional domain expertise.

Question 9:

“The new tools capable of improving texts and images with the generative future appear to a future where the amplification will reach unimaginable levels.”

Answer:

Generative AI—powered by transformer and diffusion models—augments human creativity, enabling users to produce professional-grade text and imagery with minimal effort. Early examples like Instagram filters democratized visual enhancement, while today’s LLMs and image AIs amplify this effect exponentially. As platforms embed these tools, they engineer augmentation effects that multiply user contributions, driving richer engagement loops. This accelerating cycle of AI-backed content creation fuels unprecedented network effects, but also raises ethical and moderation challenges.

Question 10:

“This model and its variants operate on four stages: a trigger, an action (like posting), a variable reward (likes or reposts), and an investment (time spent and reputation maintenance).”

Answer:

Hooked Model (Eyal, 2014) outlines how products foster habit formation: a trigger (notification) prompts an action (post or scroll), followed by a variable reward (unpredictable likes), and culminates in user investment (content creation or profile curation). Platforms now enhance this loop through generative AI—Instagram filters were early augmentation tools, and today’s AI content assistants further lower creation friction. By offering these augmentation effects, platforms multiply the volume and quality of user content. Additionally, feed-ranking algorithms strategically surface content to maximize reward unpredictability, deepening network effects and user stickiness.