

**The Role of Serial Innovators for New Product Success:  
Project Team Diversity and Time-to-Market**

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**ABSTRACT**

One of the management goals through the process of product innovation is speeding up the completion of concept generation/evaluation, design/development, and testing/programming for its timely market entry. The literature report various strategic supports for the acceleration of Time-to-Market of a new product, e.g. efficiently organizing a dedicated cross-functional team, collaboratively intensifying the resource commitment, proactively shortening the process of designing and prototyping, timely securing the capacity for manufacturing, and synergistically coordinating the marketing programs. The role and contribution of serial innovators is often essential to accomplish the complex tasks of timely developing and launching a new product, especially in many cases of radical innovation. The serial innovator's capacity of bridging the gap between technology and market is based on their confidence and ability of understanding the customer's problems and competitive environment, discovering the technical solutions, confirming the customer acceptance, and estimating the market potential of the new product.

This study examines a qualitative decision of launching a new product into the market as a pioneer or follower and explores the strategic implications of a case study on the new product success factors in relation to the role of serial innovators. The lessons from sixty pioneering and following market-entry cases confirm such success-factors as: Technical or technological superiority, Competitive advantages associated with the market-entry time, Enhanced customer service, Appeal to the customers with additional value, Superior quality of the product offering, Expanding industry and market demand, Cost or pricing advantages, Intelligence advantages, Brand identity or customer loyalty, and Partnership or leadership advantages. Many of these success factors are common to both pioneers and followers and closely related to the capacity of serial innovators having dual expertise in science or engineering and business or marketing.

**1. INTRODUCTION: PERSPECTIVES ON MARKET-ENTRY TIMING**

Timing is a critical decision for the successful market entry and penetration of a new product in the competitive business environment (Cankurtaran et al. 2013). Many evolving factors such as the expectation of customers, the response of competitors, the challenge of emerging start-ups, and the shortening of product life cycles are relevant to the timing of market entry. Alternative perspectives explore some of the timing-related issues and decisions. Strategic perspectives relate the resource availability to a firm's support for product innovation, platform building, and sustainable growth (Zhu and Furr, 2016). Analytic perspectives focus on the potential advantages and disadvantages of pioneering or following market-entry option (Kalyanaram, 2012). Practical perspectives emphasize the dynamics of market demand, the intensity of competition, the levels

of product quality and market intelligence, the phase and speed of industry evolution, and other business environmental factors as the bases of market-entry decisions (Müller-Stewens and Möller, 2017).

This article reports the background, procedure, and outcome of an exploratory case analysis as an effort to integrate the alternative perspectives on the market-entry timing with a specific focus on the qualitative decision of being a pioneer or follower with a new product. First, the strategic and tactical issues associated with the pioneering versus following option are reviewed. Second, the potential contribution of serial innovators for Time-to-Market of a new product is addressed as an issue of relevance and importance for the timely completion of development and market entry. Third, the findings from a two-round case study are reported on the success factors of new products in the competitive market circumstances. Finally, strategic implications and managerial guidelines are proposed to support the critical role of serial innovators as bridging the science or engineering and business or marketing tasks for the timely and successful product innovation.

## 2. PIONEERING VS. FOLLOWING

A lot of potential benefits are attainable from becoming a pioneer in the relevant market, especially in the high-tech industry where the product life cycle is short and thus it is difficult for the late entrant to challenge and catch up the pioneer's market dominance (Zhu and Furr, 2016). Pioneering can help increasing sales over the long life of the product, maintaining high margins of premium pricing, sustaining customer loyalty for follow-up purchases, and/or enhancing the brand recognition across the market segments. The high market performance of a pioneering new product is backed up with such observations as: (a) customers are generally risk averse, (b) pioneers offer the front-end prototypes for the product category, (c) buyers learn the product attributes from the early entrants, and (d) early entrants can secure the best positioning in the marketplace (Lieberman and Montgomery, 1998). The pioneering strategy is most likely to succeed when the firm has appropriate skills and resources to enable it pursuing a high-risk for high-return strategy.

The case of *DigitalFactory* is an example of pioneering as a winning strategy in the emerging market. As most of the business and personal exchanges are occurring digitally these days, there is a huge demand for tying the online systems together for an improved customer experience of transaction. According to the market research of IDC, global spending on IT products and services is predicted to grow from about \$2.4 trillion in 2016 to more than \$2.7 trillion in 2020 (Noyes, 2016). The rapid growth of industry comes from the competitive corporate investments in cloud, mobility and big data technologies for digital transformation. *DigitalFactory* supports the customers to visit one website to process all questions into one application from which all associated activities would share the data and timelines. One efficient flow of information replaces the redundancy of entering data multiple times by integrating the associated business processes, resulting in significant enhancement of the customer experience. The pioneering market-entry of *DigitalFactory* has allowed various advantages of utilizing its capacity to: (a) determine the industry standard, (b) select the best positioning and business partners, (c) achieve the learning-curve cost advantages, and (d) build the reputation of innovativeness among the customers. The high growth potential of the company is well supported by the industry survey on the market evolution, e.g. by the end of 2017, two-thirds of the CEOs of Global 2000 companies are expected to have digital transformation as a part of their corporate strategy; 86% of

respondents report their plans to make inroads with digital transformation over the next two years; and, 59% of respondents express some worries that they may be already too late for the technological moves to this direction (Laudhouse, 2016).

Contrastingly, the high performance of a follower's entry into the already established market may come from capitalizing on the pioneer's mistakes in technology, product, positioning, channel selection, promotion, pricing, and/or other marketing strategy implementation. Some of the possible mistakes of a pioneer are due to the potential disadvantages of the front runner such as: (a) An entrenched pioneer may not be offering a superior level of customer service, (b) A new technology may have changed the cost equation so that another new entrant can offer similar or better service at a lower cost, (c) New entrants may have developed a new way to access the market with an innovative distribution strategy, (d) The late entrants may be pricing very aggressively by taking advantage of the incumbent's tendency to average pricing across all segments, (e) Pioneering firms may experience such release flaws as failing to support the unpredicted fast growth of the market, etc. (Cabage, 2013). Google, Facebook, and Yelp were not the original innovators but the fast followers who quickly entered the respective markets that were already validated by the pioneer's products or services to gain the market dominance.

The case of *Microsoft Surface Phones* whose launching has long been postponed in the smartphone market is an example of following as a practical choice. The delays of their market-entry are related to such timing-related concerns as: Premature support of recently released Microsoft Surface Pro; Market entry of Google Pixel on the heels of iPhone 7; Bouncing back of Samsung from its battery vows; Consumers not being ready for new innovative features of the product, etc. (Wergeles, 2016). There has been a concern on the product quality and market knowledge that could be insufficient to support the decision of early market entry. After missing the opportunity during 2007-2009 when the market for Apple iPhone and Samsung smartphone started picking up exponentially, Microsoft has been preparing a plan to be a follower, particularly with its Windows 10 operating system and Azure cloud as the cornerstones to create a strong ecosystem of application and services. Microsoft is still waiting for Windows 10 to reach the point of critical mass for the Surface Phone to target the enterprise customers already using Windows operating system on their desktop and laptop devices, i.e. waiting for the high-level market penetration of the professional segment of the Windows 10 Operating System that would allow an easy transition to the newly to-be-introduced *Microsoft Surface Phones*.

### **3. PROJECT TEAM DIVERSITY FOR PRODUCT INNOVATION**

Are there potential gains of project team diversity for accomplishing an NPD project effectively? The association between diversity and the functioning of a project group is based on the notion that the heterogeneity of backgrounds among the group members leads to the generation of diverse approaches to problem identification, situation analysis, problem solving, and decision making (Pelled, 1996, Page & Donelan, 2003). The functional heterogeneity in experience or skills may facilitate the teamwork by providing diverse task-related knowledge and expertise (Simons et al., 1999, Gomes et al., 2003). Diversity in knowledge and attitude may also strengthen a group's ability to evaluate environment, generate alternatives, process information, assess outcomes, and communicate with other people (Wiersema & Bantel, 1992, Gomes et al., 2003).

Effective interaction among the team members is the key for enhancing the learning of individual members and completing the group project successfully (Song & Dyer, 1995, Sivadas & Dwyer, 2000). Interactive effort helps them achieve a better outcome through effectively monitoring how the internal and external forces evolve, estimating how changes in those forces would affect the progress and outcome of the project, and deciding how to modify the project schedules or the approaches to the project (Coute, 2002, Gomes et al., 2003).

Page and Donelan (2003) argue that the interaction among the group members is critical for building a learning culture and enhancing the educational achievement. When the members of a work group share common goals and values, diversity is particularly beneficial to effective group work (Chatman et al., 1998, Jehn et al., 1999). In summary, the quality of interaction among the members of a learning and integration-oriented work group is positively associated with the quality of individual learning. The quality of interaction among the members of a learning and integration-oriented project group is also positively associated with the quality of the group project.

Research has suggested that the success of a work group hinges upon the group members' ability to employ their differences in knowledge and perspective (Bailyn, 1993, Jehn et al., 1999). A work group can effectively integrate the outcomes of individual efforts through mutual learning among them, e.g. embracing others' knowledge and experience rather than avoiding disagreements (Gruenfeld et al., 1996). The literature in education has reported that group work is an important learning tool (Pascarella et al., 1996, Bowen et al., 1999). Gurin et al. (2002) points out that diversity in the classroom is essential for the student's learning of human relations and analytic skills. As mentioned earlier, Thomas and Ely's (2001) study supports that a learning and integration-oriented group achieves high performance attributable to mutual learning among group members. In other words, the quality of individual learning from group work is positively associated with the quality of the group project.

The results of this exploratory study also help clarify the proposition by Thomas and Ely (2001), "the members of a work group having a learning and integration-oriented perspective seem to effectively utilize the diversity in their insights, skills and experiences so as to enhance the group's capability for learning, adaptability to changes in its work, and sense for individual learning or group efficacy." This proposition is correctly applicable to the functionally diversified and more integration-oriented than learning-oriented (e.g. MBA) groups that are able to fully capitalize on the potential benefits of the members' functional diversity. In such circumstances, diversity is instrumental for an efficient accomplishment of a group project. However, the same proposition by Thomas and Ely (2001) is not applicable to the demographically or functionally homogeneous and more learning-oriented than integration-oriented (e.g. undergraduate) groups that are not yet well prepared to fully utilize the benefits of membership diversity for accomplishing their group work.

The findings from this research support the efforts to inspire the students to make the most of their membership diversity in the classroom (Pascarella et al., 1996, Bowen, Bok & Burkhart,

1999, Gurin et al., 2002, Page & Donelan, 2003), such as (a) assisting the students to organize their project groups to be as diversified as possible, (b) leading them to fully recognize the potential benefits of membership diversity, (c) motivating them to appreciate the value of the background and expertise diversity, and (d) encouraging them to capitalize on the inter-group interaction. In summary, successful cooperative learning requires interdependence that can be established through sharing goals, rewards, and structured tasks (Mills, 2003). Diversified membership in a group work can foster the member's participation, collaboration and coordination, and ultimately, enhanced learning and integration.

#### **4. ROLES OF SERIAL INNOVATORS FOR TIME-TO-MARKET**

The role of serial innovators is often essential for speedily developing and timely launching new products, particularly for the radical innovations of many innovative corporations such as Apple, P&G, Caterpillar (Crawford, 2015). Serial innovators refer to the high- to mid-level technical employees who are equipped with their own new product process. They can contribute to a breakthrough innovation with the capability of bridging the gap between technology and market through understanding the customer's problems, discovering technical solution, and developing product while confirming the customer acceptance and market potential (Griffin, Price and Vojak, 2012). Serial innovators can also be a product champion for the innovation project who can integrate different perspectives of the team members, particularly for the design-driven innovations. They are able to significantly contribute to Speed-to-Market by being involved in the whole process of product conceptualization, design, and development for the ease of manufacturing, differentiation, meeting customer needs, and supporting corporate identity (Cooper, 1999; Verganti, 2011).

The roles and characteristics of serial innovators can be exemplified with the following profile of a senior plastics engineering leader working with a pharmaceutical company: *“Prolific innovator and creative problem solver who consistently resolves complex issues to decreased cost and increase revenue. Highly regarded for analytic and strategic system thinking, and integrator with extensive expertise from concept to manufacturing. Very eager to explore emerging and disruptive technologies, applying them in new ways to overcome technical challenges, and innovating medical-device commercialization.”* It is worthwhile to note the academic and industry background of this serial innovator, Dr. HSJ: *“Having received a Doctor of Engineering (D.Eng.) degree in plastics and an Engineering Management (EM) degree, I have developed a career as an engineering specialist in the field of molding process development and operation.”*

Serial innovators are typically having or doing: System thinking, High creativity, Curiosity with interest, Intuition based on expertise, and Desire to solve the problems. Empirical studies and industry observations report the positive effect of entrepreneurial team characteristics on the performance of a new product development and business start-up, i.e. a significant and measurable contribution is performed by the team members or leaders who have the background, motivation, and expertise of a serial innovator (Jin et al. 2017). From the educational perspective, the graduate programs of many universities such as Engineering Management (EM at doctoral or Master level), Professional Scientist Masters (PSM), Entrepreneurship Management (EM at MBA or other Master level) have been instrumental for the widening of serial innovator pools. Recruiting and supporting the well-educated or trained and motivated serial innovators would be

extremely beneficial for the technology-driven product development and timely market entry of a firm doing business in the competitive global environment.

## 5. AN EXPLORATORY CASE STUDY

A two-round case study was conducted with the participation of graduate students taking an advanced MBA course, *Analysis of Customers and Markets*, during the 2017-18 academic year. The first-round study was completed in the 2017 Summer Term with an extensive review of the online reports on the ninety-two new product cases selected by the participating students -- forty-six pioneering and forty-six following market-entry cases. Along with an in-depth examination of the compiled information and data on the industry and market environment, customer needs and responses, market and sales potential, company's capacity and support, product's competitive strengths and weaknesses, project team operation, and other relevant issues, each student submitted a report pinpointing the driving forces or factors that have significantly contributed to the successful development and market entry of the relevant new product. The numbers of success factors in their reports ranged from three to seven across the cases. Various descriptors of the driving forces listed in the case reports were grouped into ten-plus broad categories of success factors by the author. The success factors summarizing the first-round study are: Cost or pricing advantages, Enhanced customer service, Technical or technological superiority, Appeal to customers, Intelligence advantages, Partnership advantages, Supporting resources, Brand loyalty, Financial strength, Segmentation advantages, and Other factors with low frequency of citation. Note that the descriptors of the key success factors were not varying much between the pioneer cases and the follower cases.

The second-round case study was conducted to confirm and validate the research process and outcome of the first-round study. It was completed in the 2017 Fall and 2018 Winter Terms with the participation of graduate students taking the same course, *Analysis of Customers and Markets*. Students were assigned to re-examine the online reports on one of the pioneering cases and one of the following cases that were randomly selected from the product list of the first-round research. After a thorough review of the relevant information and data as well as the success factors and descriptors reported in the first-round research, the participating students completed their reports re-compiling the data and confirming the success factors for the relevant cases. Three (most important) success factors (along with a few additional factors if significantly relevant) were documented with supporting information and data for each case. When compiling the case analyses into a database, the author eliminated some of cases that were duplicated or having incomplete supporting data. This data cleaning process ended up with sixty cases in total for the second-round study -- thirty pioneering cases and thirty follower cases -- such that the success factors along with various descriptors for individual cases were cross-verified and re-confirmed through the first- and second-round research. In other words, the second-round study was created to document the verified information, data, and intelligence on the industry and market environment, customer needs and response, market and sales potentials, corporate capacity and support, competitive strengths and weaknesses, and project team operation as well as the business history and mission statement of the relevant company and product.

TABLE 1 summarizes the profile of the pioneering market-entry cases for the second-round study including the names of the product, company, and the year of market entry. An example of the pioneering cases as a winning market-entry is Roomba -- a series of autonomous robotic

vacuum cleaners -- that was introduced in September 2002 by iRobot Corporation based in Massachusetts. Applying the robotics technology, Roomba has created a unique position as a disruptive innovation in the cleaner market, coexisting but not competing with the traditional vacuum cleaners. The sales of Roomba have increased to 16 million worldwide and more than 2 million in Japan with 55% of market share in the dramatically expanding market with a household penetration rate of 4% in 2010 by holding the market leader position against the big-name competitors such as Hitachi, Panasonic, and Dyson. In addition to the product uniqueness, superiority, and demand expansion, the timely establishment of a strong distributor network was an important factor that have contributed to the expansion of their global marketing bases. Local distributors were very efficient to collect the voices and feedback of the customers that were valuable for supporting the continuous product improvement and lowering the market-entry barriers, e.g. the lack of product acknowledgement or understanding in the market and the practice of traditional house cleaning. A persuasive promotion such as “Let a robot does your cleaning and do more creative things or what you want to do such as communication with your family for the time” was also effective for Roomba to improve their selling or value proposition of “Contributing to people’s time efficiency.” As one of the pioneering AI robotics applications in the consumer market, Roomba has created, vitalized, and exploited the market successfully and continues to develop and introduce new products, e.g. operating Roomba remotely away from home. (Refer to the references on Roomba for further details.)

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TABLE 2 summarizes the profile of the following market-entry cases for the second-round study. An example of successful follower cases is Starbucks -- An American coffeehouse chain that goes beyond just the drinks. Having founded in Seattle in 1971 and well competed with Duncan Donuts for 20+ years in New England area, Starbucks has remarkably transformed out of a typical follower to a front runner in the upgraded coffee industry through the 1990s and afterwards. With a new branding message in their mission statement, “To inspire and nurture the human spirit -- one person, one cup and one neighborhood at a time,” Starbucks have set their franchise operation apart from the other coffee supplier chains with upgraded offerings and open store environment as a cozy escape for the customers to feel comfortable like a café. This approach serves as a tangible component of the “one neighborhood” in their mission statement. Another marketing strategy was to go for a high-end market and to the customers with more refined taste who would appreciate the value of a quality cup of coffee to reflect the component of their mission statement, “one cup” made by a barista, not just a sales clerk. Their menus were updated to differentiate themselves in a market where all the products used to be basically similar. Starbucks have profitably added the specialty coffees like cappuccino or latte that were traditionally available at an Italian restaurant or a specialty café in the city downtowns to the public in general. The globalization of the coffee market has contributed to the expansion of their franchise networks as well, i.e. they have timely capitalized the trends of becoming homogenous in the customer tastes and buying behavior across the cultures and countries. (Refer to the references on Starbucks for further details.)

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Summarizing the intelligence on the success factors of the sixty pioneering or following market-entry cases in the current exploratory study, TABLE 3 lists the twelve categories of success factors along with some of the key descriptors of each factor. One of the important observations with the success-factor list is that many of them are related to and supported by the role of serial innovators, i.e. *Technical or Technological Superiority and Superior Product Quality* are directly related to the science-technical-engineering expertise of the serial innovators while *Cost or Pricing advantage and Appeal to Customers* are also related to the technical-engineering functions of the serial innovators while *Market Intelligence Advantage, Enhanced Customer Service, and Partnership Advantage* are primarily related to the business-marketing expertise of the serial innovators. However, *Brand Identity and Loyalty, Supporting Resources, and Financial Strength* represent the competitive advantages due to the company's internal capacity instead of depending on the market-entry time.

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The other success factors are highly associated with the entry-time advantages of pioneering or following. For example, *Product Scarcity or Uniqueness, No or Minimal Competition, Speedy Expansion of Market share, Timely Decision Making, Early Choice of Market Segment and Position, and Securing the Sustainable Market Leadership* are particularly relevant to the potential advantages of pioneering market entry. *Refinement of Market Segment and Position (mistaken by the pioneer), Focusing the Niche or Green Segments, Overwhelming Investment for Gaining the Market Share, and Massive Catch-up Marketing* are particularly relevant to the potential advantages of following market entry. Note that the advantages of entry-time strategy are closely associated with the science-technical-engineering functions of the serial innovators through their contribution to completing the tasks for timely product development and also associated with the business-marketing expertise of the serial innovators including their collaboration with the other members of the project team.

## 5. STRATEGIC IMPLICATIONS

Timing of market entry for a new product is a critical component of the strategic entry decisions covering the issues on when, where, what, who, and how (Miles et al. 2014). The entry-time should be determined in full consideration of the external and internal circumstantial factors including the dynamics of market demand, the intensity of competition, the levels of product quality and market intelligence, and the expectation of industry evolution. These dynamic factors and concerns are closely related to the potential advantages and disadvantage of being a pioneer or a follower that are subject to the speed of product development and preparation of launching through coordinated cross-functional teamwork and collaboration (Calantone and Di Benedetto, 2012). Note that the actual success or failure of a new product in the competitive market relies on many *ifs, ands, and buts* of course.

Serial innovators often perform an essential role for the speedy development and timely launching of a new product by bridging the gap between technology and market during the



complex process of new product development (Crawford, 2015). Equipped with good system thinking, high creativity, curiosity with interest, intuition based on their expertise and desire to solve the problems, serial innovators can serve as a core member or the leader of the project team (Jin et al. 2017). Many training programs usually at the graduate level of higher education, e.g. Engineering Management, Professional Scientist Masters or Entrepreneurship Management have been instrumental to widen and deepen the capacity of serial innovator pools. By recruiting and supporting the well-educated or trained serial innovators would help the technology-driven product innovation to be timely and successfully accomplished in the competitive business environment.

The current case-based exploratory study confirmed a dozen of success-factors for successful product development and market entry that are closely related to the role and potential contribution of the serial innovators. Some of these success factors such as *Technical or Technological Superiority* are directly related to the science-technical-engineering expertise of the serial innovators while other success factors such as *Market Intelligence Advantage* are primarily related to the business-marketing expertise of the serial innovators. Other success factors such as *Product Scarcity or Uniqueness* or *Refinement of Market Segment and Position* are also highly associated with the choice of market-entry strategy between pioneering and following. These potential advantages of pioneering or following are attainable by a firm's effort for recruiting and supporting the motivated commitment of the serial innovators.

The success factors that were confirmed in the current case study suggest a strategic implication to the firm pursuing a technology-driven product innovation company, i.e. the mobilization of the well-trained serial innovators can help capitalizing on many of the driving forces or factors supporting the firm's successful product development and timely market entry. It is worthwhile to note that in addition to the formal graduate programs at the university level, internal training of technicians and engineers at the company or industry level and the multi-disciplinary networking within and across the related industry can also deepen the expertise and capability of the qualified serial innovators (Yoon, 2017).

Future research may focus on utilizing the databases that were developed in the current research to develop a decision-support system to guide the benchmarking effort in the industry. The project/company/industry data for each case can be a basis for customizing the strategic and tactical moves for a firm's new product process and market-entry decisions. Further research may also deepen the databases through a quantitative analysis of the case data such as the importance ranking of the success factors or through a survey of the serial innovators on their own perception of the success factors and their commitment and contribution. A confirmatory factor analysis can be applied to quantitatively validate the outcomes of the current exploratory content analysis.

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**TABLE 1: Cases of Pioneering New Products**

<b>Products</b>	<b>Company</b>	<b>Market-Entry Time (Year)</b>	<b>Success Factor</b>
1. Roomba (Robot Vacuum)	iRobot	2002	C, F, I, (J)
2. Onstar Satellite Service	GM	1996	A, B, D, (G)
3. Liquid Soap	Minnetonka	1980	A, C, F
4. Ride Sharing	Uber	2009	A, C, E, (G)
5. Blue Jean	Levi Strauss & Co	1973	D, E, F, (H)
6. DVD Rental System	Netflix	2008	A, C, D, (E, J)
7. Coke	Coca Cola Company	1888	B, D, F, (G)
8. Energy Products & Service	Envirofit	2015	A, C, F, (J)
9. Online Community	Airbnb	2008	A, E, J
10. Walkman	Sony	1979	A, E, H, (I)
11. Rockets and Spacecraft	SpaceX	2002	B, C, F
12. Snowboard	Burton	1970	A, B, C, (D, E)
13. Snapchat	Snap	2011	A, C, I
14. Loan service	Lendingtree	1998	D, E, G, (J)
15. AWS	Amazon	2002	A, E, F, (I, J)
16. Leaf	Nissan	2011	A, B, I, (J)
17. Telecommunication Service	Skype	2003	A, B, F
18. iPod	Apple	2001	A, D, I
19. Felica	Sony	2000	A, B, E, (I)
20. PlayStation VR	Sony	2014	A, B, I
21. Prius Hybrid	Toyota	2003	A, D, I
22. Maruti	Suzuki	1983	E, F, I, (J)
23. Internet Platform	NTT DOCOMO	1991	A, D, I
24. DVD Rental Service	Netflix	2008	A, E, I
25. Internet Search Service	Google	1998	C, F, I, (J)
26. Healthya Green Tea	Kao Corporation	2003	A, D, E, (G)
27. Window 1.0	Microsoft	1986	A, H, I
28. Crispr / Cas9	CRISPR Therapeutics	2015	A, B, D, (I)
29. Helium Gas (Japan)	Air Water Inc	1969	A, H, I
30. Endoscopes	Olympus	2012	A, F, I, (J)

( ) include the relatively less important factors in comparison with the three main factors.

<b>Category</b>	<b>Success Factors for Pioneering New Products</b>
A	Technical or Technological Superiority
B	Cost or Pricing Advantages
C	Intelligence Advantages
D	Appeal to Customers with Additional Market Value or Options
E	Enhanced Customer Service and Testing Service
F	Superior Quality
G	Brand Identity or Brand Loyalty
H	Entry-time Advantages with Segment Selection, Positioning, Targeting, etc.
I	Entry-time Advantages with Product Scarcity and Uniqueness, Competition Intensity, Speedy Expansion of Market Share, Timely Decision Making, etc.
J	Market Needs, Favorable Expansion of Market Demand, Industry Evolution

**TABLE 2: Cases of Following New Products**

<b>Products</b>	<b>Company</b>	<b>Market-Entry Time (Year)</b>	<b>Success Factor</b>
1. Playstation	Sony	1994	A, C, G
2. Smart Phone (Galaxy S)	Samsung	2010	A, B, C, (E, F)
3. Television Manufacturing	Vizio	2007	B, F, J
4. iPod	Apple	2001	A, C, F, (G, K)
5. Search Engine	Google	2004	A, E, K
6. Social Media Network	Facebook	2004	A, C, D, (E)
7. Car Share Ride System	Lyft	2012	B, D, E
8. Liquid Crystal TV	Samsung	1995	A, E, K
9. CoffeeHouse	Starbucks	1971	D, F, J
10. TaTa Nano	TaTa	2009	B, C, F, (H)
11. Streaming Music Service	Spotify	2008	D, E, J
12. Athletic Apparel	Under Armour	1999	C, F, G
13. Azura	Microsoft	2008	A, D, E, (I)
14. Solar Panels	Kyocera	1993	B, I, K
15. Uber X	Uber	2012	A, B, D, (F, H)
16. Mail Order System	Asukul	1997	A, I, K
17. Nintendo	Nintendo	1983	B, F, G
18. ILOHAS	Coca Cola (Japan)	2009	A, D, F, (K)
19. SKYCTIVE-D	Mazda (India)	2010	A, H, I
20. Clothes	UNIQLO	2001	C, D, E
21. Online Music Streaming	Spotify	2008	E, H, J
22. Game	Nintendo (US)	1980	A, I, J
23. E-commerce	Alibaba	1999	A, D, H, (I, J)
24. Toilet Seat	ToTo Ltd (US)	2010	A, F, H, (I)
25. Lithium Ion Battery	LG Chemical	1999	E, H, I, (J)
26. GoToMeeting	Logmein Inc.	2004	A, E, F
27. Social Networking Service	Line	2011	A, F, K
28. Helium Gas	Iwatani Corporation	2013	D, E, H, (K)
29. E-commerce	Amazon (Japan)	2000	H, I, K
30. Solar Cell (PV Modules)	Sharp	2001	A, B, G

( ) include the relatively less important factors in comparison with the three main factors.

<b>Category</b>	<b>Success Factors for Following New Products</b>
A	Technical or Technological Superiority
B	Cost or Pricing Advantages
C	Intelligence Advantages
D	Appeal to Customers and Products Access
E	Enhanced Customer Service
F	Superior Quality
G	Brand Identity and Brand Loyalty
H	Entry-time Advantages with Segment Selection, Positioning, Targeting, etc.
I	Entry-time Advantages with Product Scarcity and Uniqueness, Competition Intensity, Speedy Expansion of Market Share, Timely Decision Making, etc.
J	Advantageous Partnership and Leadership
K	Expansion of Industry and Market Demand

**TABLE 3: Descriptors of Success Factors**

<p><b>Technical or Technological Superiority:</b> Technical strength, Utilization of the best existing technology, Advanced new technology, First-in-market digital product, Demonstrated technology leadership, High quality technology, Integration of unique software, Unique feature of electronic security, Different type of product, New 3D technology, High-quality technology, Technical innovation, Unique agent system, Technological leadership, Disruptive technology, etc.</p> <p><b>Superior Product Quality:</b> High product quality, Product superiority, High quality product and service, High product value, Innovative new product, Easy-to-use new product, Strong messenger of added features and function, etc.</p>
<p><b>Cost or Pricing Advantage:</b> Low product cost, Reduced price, Effective pricing plans, Costs lower than other brands, Preventing price collapsing, High price with no equivalent products in the market, Low price plus time value, Low cost for the proved quality, High switching costs for early adopters, Downgrading for the price-sensitive customers, Adding pluses into lineups, Reduction of hardware costs, Cost leadership, Low pricing, Cost reduction, Focus on controlling all aspects of costs, Marketing costs at minimum level, Aggressive pricing, Free shopping fee, etc.</p> <p><b>Appeal to Customers:</b> Appealing appearance, Customer preference, Aesthetic prototype, Innovated product line of aesthetic models, Meeting the customer needs and preferences, Beautiful computer graphics, Good background music, Weight reduction, Menu with sizes in Spanish, Overwhelming number of items across distribution channels, etc.</p>
<p><b>Market Intelligence Advantage:</b> Facility knowledge, Market intelligence, Analysis of market demand, Analysis of customer and market data, Understanding the market potentials, Changing the game by aiming at the different target segment, Adopting a new business model, Market intelligence on the sensitivity of price, etc.</p> <p><b>Enhanced Customer Service:</b> Upgraded customer service, Local customer advisors and technicians, Catching the customer needs, Caring the customer's risk averseness, High quality service with optimized costs, Free credit check, Good customer support with phone and email, Direct communication with customers, Loyalty card program, Responding the voice of customers, Technical support staffs, Understanding the customer choices or problems, Adopting the customer's need, Fulfilling user review as reference information at purchase, Web services, etc.</p> <p><b>Partnership Advantage:</b> Collaboration with supply chain partners, Creating and extending partnership, Manufacturing alliances, Successful partnership with the suppliers and distributors, Partnership opportunity for exposure, etc.</p>
<p><b>Brand Identity and Loyalty:</b> Established brand, Strong existing brand identity, Total lifestyle brand, Building the brand loyalty, High awareness, Health awareness, Very positive company image, Favorable brand image, etc.</p> <p><b>Supporting Resources:</b> Human resource support, Preemptive securement of the scarce resources, Occupying high-quality materials and supplies, Crowd sourcing of contents, Investment for the development of additional technology, Pipeline of new opportunities, etc.</p> <p><b>Financial Strength:</b> Sustained financial support, Healthy financial condition of the company, Investment even though the demand was low, etc.</p> <p><b>Pioneer's Advantage:</b> Product scarcity or uniqueness, No or minimal competition, Speedy expansion of market share, Timely decision making, Early choice of market segment and position, Securing the sustainable market position, etc.</p> <p><b>Follower's Advantage:</b> Refinement of mistaken market segment and position, Focusing on the niche or green segments, Overwhelming investment to gain the market share, Massive catch-up marketing, etc.</p>