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Innovations at Harley-Davidson

*This case was written by **V Sarvani**, under the direction of **A Mukund**, ICFAI Center for Management Research (ICMR). It is intended to be used as the basis for class discussion rather than to illustrate either effective or ineffective handling of a management situation.*

The case was compiled from published sources.

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North America, phone: +1 781 239 5884, fax: +1 781 239 5885, e-mail: ECCHBabson@aol.com.
Rest of the World, phone: +44 (0)1234 750903, fax: +44 (0)1234 751125, e-mail: ECCH@cranfield.ac.uk.

INNOVATIONS AT HARLEY–DAVIDSON

"Several unique elements and concepts in Harley-Davidson's processes ensure the degree of innovation, speed to market, match of development resources, and financial viability of individual projects as well as the entire new product portfolio."

- www.pdma.org, September 2003.

"Growth is a great thing. Also, it has its challenges. It requires a lot of innovation."[1]

- Kari Eberle, Vice-President & General Manager (Harley-Davidson's Kansas City Plant), in December 2003.

CELEBRATING 100 YEARS OF INNOVATIONS

August 2003 was marked with celebrations for the US-based global motorcycle and motorcycle accessories major Harley Davidson Inc, (H-D). The company announced the culmination of its 14-month long 100th anniversary celebrations with a three-day special event in and around Milwaukee (Wisconsin). Thousands of H-D patrons attending the 'party' were entertained with music concerts, facility tours, demo rides and a display of various H-D motorbikes.

Referred to by some as the world's largest birthday party, the event was strong proof of the power that the legend and cult of H-D motorcycles held over its customers. Brand-building and manufacturing excellence were often touted to be the two pillars on which the company's success rested. However, in late 2003, H-D received two industry awards that summarized its competitive strategies over the previous century into one word – innovation.

In September 2003, the company was given the 'Outstanding Corporate Innovator (OCI) Award' by the Product Development and Management Association (PDMA).[2] In December 2003, H-D got the 'Technology Leader of the Year Award' from *Industry Week*.[3] According to PDMA sources, H-D was selected for the OCI award because of "its established brand, its strong connection with customers, and because of its continued commitment to product innovation."[4]

Sources at *Industry Week* opined that H-D's achievements were notable for two reasons. Firstly, the company's management accepted the challenge to innovate and win the global race for survival in the motorcycle business. Secondly, the management's leadership and vision had established a legacy that led to 16 consecutive years of record revenue and earnings growth. This was possible because the company had made innovation a 'corporate philosophy' over the years. According to industry experts, H-D's growth was at heart a story of its constant focus on innovation at the product, process, marketing and organization levels.

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[1] 'Harley-Davidson's Growth Felt in St. Joseph Area,' www.newstribune.com, December 30, 2003.

[2] Founded in 1976, PDMA is a non-profit organization involved in improving the effectiveness of people engaged in developing and managing new products (services as well as manufactured goods). It supports several knowledge-generating activities through a host of functions/programs.

[3] A weekly publication (print and online) for senior-level management from the manufacturing industry.

[4] 'Harley-Davidson and the Polyolefins and Elastomers Business Group of The Dow Chemical Company Recognized as PDMA's 2003 Outstanding Corporate Innovators,' www.pdma.com, September 22, 2003.

INNOVATION IN THE BUSINESS CONTEXT

The creation of something new, that is innovation, has been the key growth driver behind the evolution of civilization across the globe. Being the basis for survival and development, innovation has been used in every walk of life by people everywhere. In the business context, innovation can be defined as the 'process of introducing a new idea, or inventing/creating something which has not yet been discovered or developed in the market or development arena.'[5] Companies can innovate on one or more of these fronts – product, process and service.

Within each category, innovation can be of three types: Radical innovation (a breakthrough product, process or service), distinctive innovation (considerable improvements in the existing product, process or service) and incremental innovation (small improvements in the existing product, process or service). The process of radical innovation involves a major change in the approach adopted to address a need, or could involve taking an entirely new approach.

Distinctive and incremental innovation involves making small improvements and extensions to the existing products, processes and services. The aim of such innovations is to increase efficiency through higher quality, reduced time and lowered costs. The above theories of innovation can be summed up thus: Innovation of any type is said to occur when a change in the product, process or service results in a better or improved solution for an existing need.

Traditionally, companies believed innovation to be an expensive activity, with a long payback period. Hence, companies failed to retain their interest in it for the required period of time and often abandoned innovation projects midway. In organizations that did retain interest, most innovations were restricted to new products. These were mainly contributed by the company's research and development (R&D) department or by academic researchers and individuals. The process of innovation was mostly unpredictable and unmanageable. Reportedly, no formalized innovation process was in existence during the early 1900s.

However, this scenario changed in the mid 1900s when innovation became an essential tool for survival of businesses. Now, companies *had* to innovate in order to meet the needs of the changing environment, evolving society and customer desires, changing industrial strategies and structures, advancing technology and growing competition. Due to these factors, new products were launched by new and old competitors at an alarmingly fast rate. Moreover, good ideas introduced by one company were quickly copied by its competitors. This put severe pressure on companies to come up with new/better products, processes and services faster.

Many leading companies from various industries across the world realized that customers were now more sophisticated, demanding and segmented, and expected more in terms of newness, customization, quality and price. This marked the beginning of conscious efforts by companies to use innovation as a tool for deriving competitive advantages. These companies benefited in terms of faster growth, better corporate positioning and increased market shares. (Refer Exhibit I for some of the world's successful corporate innovators.)

However, in their quest for successful innovations, companies faced a lot of barriers. These were internal in nature (like the organization not being conducive to innovation, lack of staff motivation, conventional management behavior, group behavior, individual behavior), as well as external (like insufficient resources and conventional accounting practices) (Refer Exhibit II for a look at the process of innovation and the barriers). The corporate world also saw that the failure rate of innovation projects was very high. Reportedly, only 10% of proposed innovations (at any company) were approved and less than 10% of these succeeded in the market place.

[5] www.innovationauthority.com

However, the above problems were more due to the faulty execution of the innovation process, and not because of any inherent flaw in the concept. Having realized this, companies began to carefully 'manage' the process of innovation. New ideas for innovation were contributed through team efforts, by leveraging existing competencies in new ways. Companies began to look for ideas and opportunities beyond current businesses. Experts believe that, in the 21st century, companies would innovate to address articulated and unarticulated customer needs, and the served as well as unserved markets.

HARLEY-DAVIDSON – BACKGROUND NOTE

H-D was one of the few companies that had been managing its innovation processes even before the days the concept became formally popular. The company's history can be traced back to 1903, when William Harley (Harley) and Arthur Davidson (Davidson) opened a small motor-shed in Milwaukee. Innovation was an essential part of H-D from the very beginning – the idea behind the business was to find a way that would ease the physical efforts needed to ride a bicycle. In 1903, they built the first H-D motorcycle (essentially a bicycle with an engine) to make going uphill easier. Needless to add, the motorcycle was an instant success.

By 1905, H-D was regularly producing these bikes nicknamed the 'Silent Gray Fellow.' With money loaned by an uncle, the duo built their first 2,380-squarefoot shop. Two years later in 1907, H-D was incorporated as a company, producing 150 motorcycles in the first year. Inspired by the success of their initial efforts, the twosome assisted by other family members, developed an upgraded version of the motorcycle in 1909. This model featured a new engine, known as the 'V-twin' (it had two cylinders arranged in a 'V' angle).

The new product was innovative in two ways. Firstly, the 'V-twin' engine produced a deep, distinct rumbling sound that no other motorcycle at the time made. Secondly, the engine reached a speed of over 60 mph, making it a technological breakthrough at that time. The new upgraded version of the H-D motorcycle was a major success. The company's sales increased to 1,149 units in 1909 and to 9,500 units by 1912. By now, H-D had begun exporting the motorcycles as well, beginning with Japan.

The success of the H-D motorcycles attracted a number of manufacturers into the business. In 1913, there were as many as 150 competitors in the US motorcycle market. However, H-D cashed in on its first-mover advantage by selling motorcycles to the US military and police departments during the 1910s. During World War I (1914-18), H-D sold 20,000 motorcycles to the US military forces. During this period, the company also began to make its mark in racing competitions.

In 1916, H-D launched '*The Enthusiast*' magazine for its customers. The idea was to provide customers with the latest information on the company's products and on the motorcycle industry. The magazine was also a platform for H-D customers to voice their opinions (by the 21st century, *The Enthusiast* had become the world's oldest continuously published motorcycling magazine).

During the 1920s, due to its focus on constantly upgrading technologies, the company was able to introduce the front brake system and the unique teardrop-shaped gas tank. Coupled with the thrust on product development and sales strategy, these innovations helped H-D to successfully beat the competition. It emerged as the world's largest motorcycle manufacturer, with dealers in 67 countries. The poor economic conditions in the US (the Great Depression of the 1930s) helped the company indirectly as many other motorcycle manufacturers ran into heavy losses and went out of business.

H-D managed to survive during these difficult times thanks to its exports and the fact that it supplied most of its motorcycles to the US postal service and police departments. During the

early 1940s, only H-D and Indian (a company famous for its 'Ghost' range of motorcycles) remained in the market. H-D prospered from military purchasing during World War II. The company manufactured more than 90,000 motorcycles for the US military, which elevated its production to record levels. Consequently, the company earned the coveted Army-Navy 'E' award for excellence in war-time production. In 1947, H-D began manufacturing biker gear like leather motorcycle jackets and sold them through its dealers. More motorcycle accessories such as boots, shoes and clothing were introduced in subsequent years.

In 1952, the company launched the K-model in the market. In 1953, when even Indian closed its operations, H-D became the sole motorcycle manufacturer in the country. H-D's popularity and sales grew rapidly in the late 1950s and 1960s as it brought out a new range of 'super-bikes'- the Sportster (1957), Duo-Glide (1958), Electra Glide (1965) and Super Glide (1971). These 'loud and heavyweight' motorcycles soon became symbols of a counterculture in the US. Added to this, the freedom-loving and carefree attitude of people in the 1960s, gave rise to a 'biker culture,' of which H-D was an integral part. Tattooed motorcycle enthusiasts traveling across the US in groups on their H-D motorcycles in black leather gear became an image increasingly associated with this culture.

Reportedly, part of H-D's success was due to Davidson's innovative idea of setting up a network of dealers that would sell only H-D motorcycles. The company was able to attract a large number of dealers to this network as it promised them a handsome share in profits and also offered product guarantees. During the late 1950s and 1960s, H-D motorcycles became a fashion and lifestyle statement. By the late 1960s, the company was popular as a rebel brand and its 'bad boy' image appealed to the rebel inside its largely male clientele.

In 1965, H-D went public and was freed from family ownership. It introduced the Electra Glide (its first motorcycle with an electric starter) to replace the Duo Glide in 1965. In 1969, the company was acquired by the American Machine and Foundry Company (AMF), a leading manufacturer of machinery, automobiles and sporting goods. In the early 1970s, H-D expanded its manufacturing capacity by building a new plant in York, Pennsylvania. To meet the expansion costs, it increased the price of its vehicles, a decision that made many of its customers unhappy. During this period, H-D began offering customized motorcycles to its customers.

By the mid 1970s, the quality of H-D motorcycles began declining as AMF kept pushing H-D to increase sales. Apparently, AMF wanted to make the most of the booming demand in the market. Thus, against 14,000 units in 1969, H-D had to produce 75,403 vehicles in 1975 and, as a result, quality had to be sacrificed. Problems intensified when high-quality, low-priced Japanese motorcycles from Honda, Suzuki and Kawasaki entered the US.

By 1980, due to the fall in sales, H-D was on the brink of bankruptcy and AMF decided to sell it. In 1981, thirteen members from the management purchased the company from AMF in a leveraged buy out funded by the US-based financial services major Citicorp. However, within the first year of buy out, the overall demand for motorcycles declined, hurting H-D badly. This further reduction in sales resulted in a large inventory of unsold motorcycles. The management realized that it could not continue to function at the current operating cost and production levels.

Moreover, the reputation of H-D motorcycles had taken a severe beating in the market. Its prices were reportedly 30% higher than the Japanese models. As a result of the above factors, the company's market share declined from 80% in 1969 to below 20% in 1979. The financial position of the company was also very bleak. In order to cut costs, H-D had fired almost a third of its staff. Reportedly, the company incurred losses to the tune of $50 million two years after the buy out. According to industry observers, apart from the external problems, the failure to invest in innovation was one of the main reasons that was pushing the company towards oblivion.

HARLEY-DAVIDSON: BACK TO INNOVATION

Given the above circumstances, US President Ronald Reagan's decision to increase tariffs on Japan's motorcycle imports in 1983 (from 4.4% to 49.4%) to revive the US motorcycle industry, came as a positive development for H-D. However, the new tariffs were to be effective only for five years and would reduce annually thereafter. The company had to make considerable improvements in its business processes to sustain itself in the market in the long-run. The H-D management accepted the challenge and embarked on what analysts called the path of adopting innovation as a tool to improve the company's performance at all levels – marketing and customer relations, organizational changes, product, process and manufacturing.

MARKETING & CUSTOMER RELATIONS

H-D was well aware that its brand was its greatest strength – it decided to leverage the same for boosting growth. The company recalled how the practice of 'enhancing customer experience' in the form of '*The Enthusiast*' had paid off handsomely. H-D management wanted to reinvent that practice and hence established the Harley Owners Group (HOG) in 1983. The main objective of HOG was to involve customers in a way that would forge stronger relations between them and the company.

Every H-D motorcycle buyer was given a free one-year membership to HOG. This proved to be an extremely insightful business decision as over 33,000 members joined the group in a short span of time.[6] Through HOG, the company organized several motorcycle rallies and tours (at the state and national levels). These rallies involved giving customers demo rides, letting them interact with company officials, and selling new bikes and merchandise. H-D thus encouraged customers to use their motorcycles and share 'their excitement of riding.' Over the years, HOG not only served as a primary customer relations tool, but also allowed H-D to promote/demonstrate new products to its customers.

Aware of the important role played by dealers with respect to customer service, H-D took various initiatives in this context. In 1983, the company launched a three-day dealer training program, which came to be known as the 'Harley Davidson University.[7] Through this program, H-D trained its dealers to develop their business and leadership skills to be able to sell more effectively. Subsequently, the company trained them in various other areas, including retail management, inventory management, merchandising and customer service.

In 1983, H-D launched a trademark licensing program for its dealers which helped the company eliminate the problem of bootlegged merchandise. In the following years, H-D published several fashion and collectibles catalogs featuring its merchandise. During the late 1980s and early 1990s, the company also began to sell its merchandise (especially clothes) through popular retail stores in the US like J C Penny and Bloomingdales. In this way H-D was able to capitalize on the tough image of its brand. In another innovative step, the company set up 'Harley Davidson Cafes' at places where its dealer stores were located, to attract a larger number of people.

The next customer-centric innovation was the establishing of Eaglemark Financial Services Inc and Harley Davidson Financial Services Inc (HDFS) in 1991[8] and 1993 respectively. Through

[6] In the early 1990s, HOG had more than 295,000 members and 900 chapters operating in the US. In 2001, the number of members had increased to 660,000, spread across 115 countries.

[7] H-D began offering regular comprehensive dealer training programs through the Harley Davidson University from 1992.

[8] HDFS offered various innovative financial services over the years. In 2003, in recognition of its consistent efforts in this area, the company was awarded the '2003 Association for Financial Professionals (AFP) Pinnacle Award' grand prize. HDFS won this honor for its creation of EPAY, an Internet-based

these outfits, the company offered wholesale insurance and financing programs. The services included motorcycle inventory planning, parts and accessories trade acceptance, and commercial insurance brokerage to its dealers in US. These subsidiaries also offered dealers and customers a credit card called the Harley Davidson Chrome Visa card. Dealers were also given special discounts and 120-day delayed billing terms to help them cope with sales fluctuations.

In 1995, encouraged by the success of the HOG initiative, H-D launched the Buell Riders' Adventure Group (BRAG), an exclusive club for owners of Buell motorcycles.[9] Like HOG, BRAG also aimed at enhancing the overall customer experience by bringing motorcycle enthusiasts together to share their on-the-road experiences.

Throughout the 1980s and 1990s, H-D focused on developing products based on customer feedback. It expanded into new niches after it found that customers were looking for more from the company than heavyweight vehicles. Thus, it entered the customized, touring, sport/touring and sport/street motorcycle categories.

Unlike the time when it offered only three basic styles in one color (gray), H-D began producing a number of models in various colors. This enabled the company to attract repeat customers. In the 1990s, when H-D realized that a lot of women were buying its products (both motorcycles and merchandise), it began making products to suit the tastes of its changing customer profile.

H-D knew that it was not in a position to compete with the foreign manufacturers on cost and that it could not afford to price its bikes lower than theirs. To offset this, the company came up with an innovative strategy: Develop a perception of 'value over price' in the customer's mind. This it did by bringing out new models of motorcycles in the niches mentioned earlier and by large-scale construction of motor parts (Refer Exhibit III for a look at the products launched by the company over the years). H-D manufactured these parts with steel, unlike many foreign players who used plastic. This allowed the company to rebuild and rebore the parts, thus making them more reliable.

H-D also ensured that production did not exceed the demand for its motorcycles. As a result, the demand for H-D motorcycles increased to such an extent that in the late 1990s, customers had to wait six to eight months for buying an H-D motorcycle. The craze for the company's bikes was such that old H-D motorcycles were being sold at prices 25%-30% higher than the list price for the new models.

MANUFACTURING PRACTICES[10]

As mentioned above, prior to the 1980s, H-D was not able to meet its production targets. The company's manufacturing plants were designed to use a batch process flow of materials on the plant floor. As a result materials (parts) were tooled in large batches at different locations in the plant and workers had to make use of forklifts to move the materials around the factory. This resulted in high set up times; consequently, product output rates were very low. Due to this, H-D incurred high labor costs per unit of production, which hampered large-scale production.

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payment program for the nationwide H-D dealer network (AFP is a membership-based organization providing industry-specific solutions in the field of treasury and financial management).

[9] H-D acquired a minority interest in the Buell Motorcycle Company, a US-based sports motorcycle manufacturer, in 1992.

[10] A detailed discussion on operational restructuring initiatives taken by the company in the 1990s [supply chain management, using IT tools effectively, redesigning the maintenance, repairs and operations (MRO) framework, and rethinking the logistics and distribution-related practices) is covered in the ICMR case study, '*Operational Restructuring at Harley-Davidson*'].

Further, H-D used Material Requirement Planning (MRP), a complex computerized system, to maintain its inventory levels. This offset any manufacturing hitches and ensured that the assembly line was not halted. However, the company found that this system was inefficient as it did not address the manufacturing process problems.

In the mid 1980s, to improve its manufacturing processes, H-D decided to follow the continuous flow process. To do so, it had to adopt new manufacturing philosophies such as Just–In-Time (JIT) inventory management, Statistical Process Control (SPC) and Employee Involvement (EI) with focus on a highly participatory and flexible workforce. Thus began the culture of process innovation at H-D.

By implementing JIT at its plants, H-D was able to operate with lower inventory levels. The system also ensured that the company used the entire inventory, thus reducing overall inventory costs. H-D even encouraged its suppliers to implement JIT in their production processes to complement its own inventory system. Subsequently, H-D improved upon the JIT system and developed a system of its own. This new system, named MAN (Materials As Needed), was tailor-made to allow H-D to purchase and build materials and parts as and when required. It enabled the company to reduce production costs and improve the quality of its products.

SPC also helped immensely in improving quality – it involved using simple statistical techniques and control charts to monitor variations in manufacturing processes. H-D realized that for SPC to work, the company needed to place the responsibility for quality on the employees who worked directly with the materials at the shop floor. However, H-D had to provide its employees with extensive training in using statistical tools effectively.

At this point, H-D realized that to continuously improve the quality of its manufacturing, employees should be willing to learn new techniques. Thus, EI was identified as a key issue for bringing about continuous improvement. Consequently, H-D implemented a set of guidelines to ensure successful EI (Refer Table I for details).

TABLE I
GUIDELINES FOR SUCCESSFUL EI IMPLEMENTATION

- Management should show that continuous improvement of quality and efficiency is a way of life.
- Management should be committed to the people-building philosophy – the belief that employees are rational, thinking human beings and, therefore, should be encouraged to develop and grow.
- Management should be committed to the EI program, thereby fostering mutual trust between employees and itself.
- Managers should encourage participation from all employees.
- Employees should be trained in specific quality-control and problem-solving techniques.
- Employees should take up/be given the responsibility and authority for quality, production, preventive maintenance, and other related areas of their jobs.
- Employees should not resort to blaming each other if things go wrong.
- Employees should help each other to develop and grow.
- Creativity should be encouraged through a non-threatening and open atmosphere.

Source: adapted from 'Harley Davidson's Business Practices,' at http://stroked.virtualave.net

MAKING THE ORGANIZATION CONDUCIVE TO INNOVATION

In the mid 1980s, the management realized that its traditional command-and-control culture did not foster healthy relationships among employees at all levels. Identifying this as a factor that could hamper productivity and innovativeness, the company decided to make the culture more open and participatory. H-D now began interacting more with the employees at the shop floor and this, in turn, aided the management in implementing new practices. The management shared the importance of the company's values with its employees. This way, it was able to instill high moral values in them and emphasize its commitment towards its employees.

As a result of the above, H-D was able to develop a harmonious relationship with its worker unions based on trust, respect and communication. The company even entered into long-term (5-7 years) operating agreements with its union partners like Paper Allied Industrial Chemical and Energy Workers International Union (PACE) and the International Association of Machinist and Aerospace Workers (IAM). Analysts opined that H-D was one of those rare companies that had developed exceptionally good, strong and long-lasting labor relations.

In the early 1990s, H-D established the Harley Davidson Learning Center, through which workers were trained in their respective jobs. The company encouraged the concept of 'self-managed' teams wherein workers could set their own work schedules.

H-D also took a holistic approach to organizational development, stressed on lifelong learning of its employees and enhanced communication across the organization. It applied a non-traditional organizational approach which encouraged cross-functional collaboration. H-D divided its senior management group into three functional areas called Circles. These were: the Create Demand Circle, Produce Products Circle, and Provide Support Circle. Each Circle comprised a group of leaders representing specific functions. For example, the Provide Support Circle consisted of senior managers who were experienced in fields like Finance, Law, Human Resources, Information Services and, Communication and Strategic Planning.

To aid the process of innovation, H-D introduced the concept of collaborative decision-making by forming a Functional Leadership Group (FLG). The FLG comprised seasoned H-D managers who had an in-depth knowledge of the business and its history, and new managers, who could introduce different perspectives and best business practices from other organizations.

NEW PRODUCT DEVELOPMENT

All the above changes at various levels of the organization laid the ground for innovation in new product development (NPD) as well. H-D believed that NPD was not just about engineering, but a creative process where consistency in approach was critical. The company also believed that technology should be used only to fulfill this creative process.

To make this process easier, H-D used an NPD methodology to ensure consistency in actions (defining the who, when and how of NPD), provide a mechanism for managing the risk of NPD, establish a common language and terminology for managing NPD, define interface points for the community, and foster organizational learning by capturing and measuring repeated activities over time. In the late 1980s, H-D established the Concurrent Product & Process Delivery Methodology (CPPDM), through which it delivered products and services. The methodology was also used as a tool for organizational learning.

To implement CPPDM, the company created a Product Development Office (PDO), which made recommendations for new products and changes in old products. These changes were authorized by another team called the Product Development Leadership Learning Team (PDL2T). The CPPDM methodology was divided into five distinct phases. Each phase took care of various issues related to the NPD lifecycle (Refer Table II for details).

TABLE II
FIVE PHASES OF CPPDM

Phase 0: Expectations of the project are identified.
Phase 1: Project is shown to be feasible with enough confidence to deliver project expectations that a launch date can be set.
Phase 2: Project is verified to show that the design solution meets the expectation of the project.
Phase 3: Project is validated and shown ready for production.
Phase 4: Capture the learning and project close out.

Source: 'Harley Davidson New Product Development,' www.pdma.com.

CPPDM had a series of 'phase reviews' wherein PDO reviewed the efforts of the projects at various phases. These reviews allowed the management to reassess and reaffirm a project before any further investments were made in it (since with every phase the investment in the project increased), and authorized the commitment rate for the next phase. PDL2T, which comprised a Product Development and Leadership Community, regularly evaluated the lessons learned from cycle assessments and incorporated new learning into CPPDM.[11] PDL2T laid down three primary objectives of CPPDM: achieving consistency in process, effective planning and execution, and identifying and tracking improvements.

Experts described H-D's product development process as 'rigor in concept, development and commercialization – freedom in application.' The 'rigor' in this process comprised three elements – Swirl, Bins and, Cadence & Flow – which were supported throughout the CPPDM. The initial process of NPD at H-D was captured in the 'Swirl' model. The Swirl model was divided into three parts – the Zone of Consideration, Firewall and Acceptance (Refer Exhibit IV). Initially, innovative and potential ideas circulated in a 'swirl' of conversation among employees competing for attention, time and legitimacy. Then they entered the 'zone of consideration' when new ideas or changes were considered to be useful.

These ideas then reached the Firewall phase where the political power of the idea and its ability to win supporters were tested. Thereafter, the idea progressed to the 'Acceptance' stage after gaining sufficient support and withstanding challenges. Thus, new concepts and ideas stayed in the Swirl until they evolved, expanded, contracted and were able to attract strong proponents who could sell them to the organization. H-D derived several benefits and achieved various objectives by making use of the Swirl model (Refer Table III for details).

TABLE III
THE SWIRL MODEL

• Learning about the idea.
• Coalition-building.
• Assessment against financial cost and effort.
• Assessment of the 'common good' of H-D vs. one fraction.
• Assessment against other ideas in the Swirl.
• Identification of a high-level champion.
• Affection for the idea grows, or not.

Source: 'Harley Davidson New Product Development,' www.pdma.com.

Once an idea passed through Swirl and was accepted, the NPD team took up the project on a full scale. Due to the 'rigor' of Swirl and the Firewall, wrong concepts/ideas did not even enter CPPDM. Hence, concepts once accepted to the CPPDM were rarely discontinued.

The next stage of NPD was referred to as 'Bins.' An idea exiting from Swirl was placed in one of six types of bins (Refer Exhibit V for details). Each bin was assigned a designation, which

[11] In 2001, CPPDM version 7 was developed after several iterations and increments.

represented the degree of risk associated with the execution of the project. The designation of each bin depended on three parameters – the number of project hours, the timing, and the degree to which the project team intended to follow the set methodology of elements.

Each bin was also assigned a size – small, medium or large – depending on the market risk and project risk of the proposed project. Therefore, a large bin size had greater market and project risks. Bin designations were an important part of CPPDM as this allowed the organization to operate at peak efficiency by rightsizing the projects. It even facilitated project portfolio management and life-cycle management, aligning projects to flow through Product Development.

The next stage in the NPD process was called 'Cadence & Flow.' Here, the cadence of projects was managed within the life-cycle plan to ensure proper flow. Projects were scaled back or expanded to fit a particular bin size. Cadence and Bins worked together to ensure a smooth flow of activities in the overall product development system. The Cadence & Flow stage was critical to the CPPDM process as once projects were stored by bins, they fell into a rigorous development-execution cycle. Here, the project exited Phase 1 (feasibility) of the CPPDM process and was launched with a schedule.

The remaining stages of NPD were carried out by the Product Development Community (PDC) led by Platform Leadership Teams (PLTs) who had all the necessary functions of the organization aligned to them. Members of the platform team comprised experts from the marketing, manufacturing, engineering and purchasing departments. These teams were supported by System Groups belonging to the engineering department. To ensure smooth flow of projects, PDO determined fixed hard dates[12] in collaboration with PLTs. This allowed everyone in the organization to know at what point of time his/her services were needed for the project.

INNOVATING FOR A TOTAL 'CUSTOMER EXPERIENCE'

H-D's formal approach towards NPD through CPPDM methodology enabled it to introduce successful and innovative products consistently. As a result, the company was able to post impressive growth in earnings and revenue between 1986 -2001 (Refer Exhibit VI). In the early 2000s, 80% of H-D sales came from new products (models less than five years old).

According to industry observers, the positive results of H-D's innovation philosophy was attributable to the fact that it used technology and engineering to support the processes that aimed at enhancing the overall customer experience. The company worked on the premise that the customer's experience transcended the product. Products were no doubt the core, but H-D sold its customers a total 'H-D riding experience.' One source at H-D summed this up as 'two riders sharing the same Harley-Davidson experience on different generations of bikes, and both of them longing for the next great product to further enhance their experience.'[13]

Some analysts felt that the 14-month long worldwide 100th anniversary celebration by H-D was its largest innovation ever. Reportedly, no other company had taken such an opportunity to bond even closer to its customer base. The fact that it used the event to showcase some of its latest innovative products was an added benefit. The anniversary celebrations seemed to have renewed the company's commitment to improving the 'customer experience' through innovation.

[12] Hard dates are fixed calendar dates for achieving various targets in the project. Fixing hard dates allows the organization to converge on key project criteria.

[13] '100 years of great motorcycles: Developing motorcycles for the customer's experience,' www.pdma.com.

QUESTIONS FOR DISCUSSION:

1. What is innovation? Explain the process of innovation and its applicability in the business context. Why do you think organizations all over the world lay so much emphasis on innovating?

2. Study the evolution of H-D over the decades and comment upon the role of innovation in making the company the largest motorcycle manufacturer in the US until the 1970s. What factors made H-D motorcycles so popular in this phase?

3. What do you think were the reasons for H-D losing ground during the late 1970s and the early 1980s? What strategies did the company adopt to revive its position? Explain with respect to steps taken at various functional levels (marketing and customer relations, manufacturing, organizational change and new product development).

4. 'H-D had created such a loyal customer base because it provided them with not just a great technologically advanced product but with more value and better customer experience' Explain how H-D used innovation as a strategic tool for creating more and more satisfied customers over the years.

EXHIBIT I

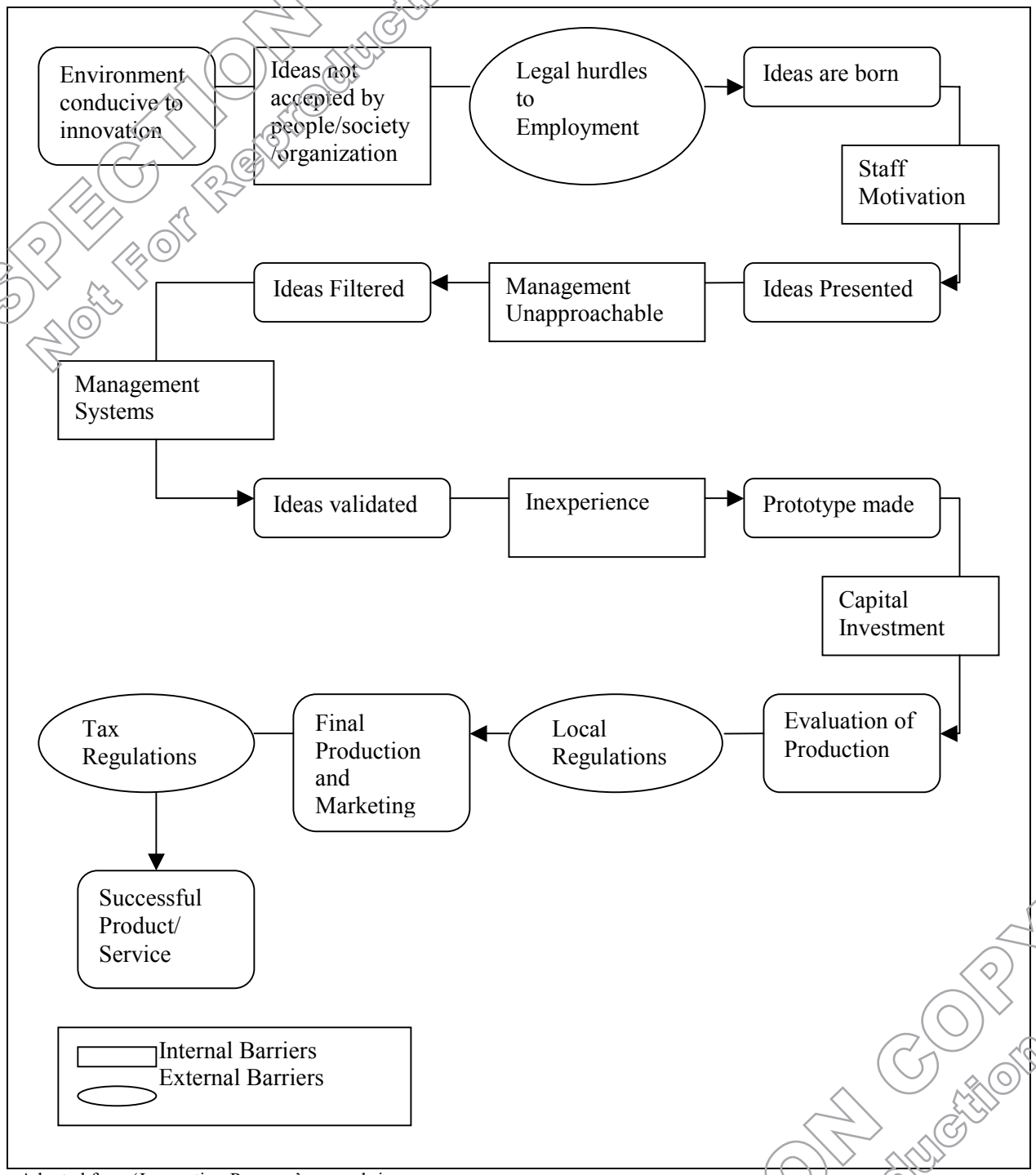
SOME OF THE WORLD'S WELL-KNOWN CORPORATE INNOVATORS

Type of Innovation	Description	Business Example
Innovation Category – Finance		
1. Business Model	How the business makes money	Dell revolutionized the personal computer business model by collecting money before the consumer's PC was even assembled and shipped (resulting in net positive working capital of seven to eight days).
2. Networks and Alliances	How a business joins forces with other companies for mutual benefit	Consumer goods company Sara Lee realized that its core competencies were in consumer insight, brand management, marketing and distribution. Thus, it divested itself of a majority of its manufacturing operations and formed alliances with manufacturing and supply chain partners.
Innovation Category - Process		
3. Enabling Process	How a company's core processes and workers are supported	Starbucks can deliver its profitable store/coffee experience to customers because it offers better-than-market compensation and employment benefits to its store workers – usually part-time, educated, professional, and responsive people.
4. Core Processes	How to create and add value to business offerings	Wal-Mart continues to grow profitably through core process innovations such as real-time inventory management systems, aggressive volume/pricing/delivery contracts with merchandise providers, and systems that give store managers the ability to identify changing buyer behavior and respond quickly with new pricing and merchandising configurations.
Innovation Category – Offerings		
5. Product Performance	How a business designs its core offerings	The VW Beetle (in both its original and newest form) took the market by storm, combining multiple dimensions of product performance.
6. Product System	How to link and/or provide a platform for multiple products	Microsoft Office bundles a variety of specific products (Word, Excel, PowerPoint, etc.) into a system designed to deliver productivity in the workplace.
7. Service	How to provide value to customers around and beyond your products	An international flight on any airlines will get a person to his intended designation. A flight on Singapore Airlines, however, makes one almost forget that he is flying at all, with the most attentive, respectful, and pampering pre-flight, in-flight and post-services one can imagine.
Innovation Category – Delivery		
8. Channel	How a business brings its offerings to market	Legal problems aside, Martha Stewart has developed such a deep understanding of her customers that she knows just where to be (stores, TV shows, magazines, online, etc.) to drive huge sales volumes from a relatively small set of 'home living' educational and product offerings.
9. Brand	How a business communicates about its offerings	Absolut conquered the Vodka category on the strength of a brilliant 'theme and variations' advertising concept, strong bottle and packaging design, and a whiff of Nordic authenticity.
10. Customer Experience	How customers feel when they interact with a company and its offerings	Harley-Davidson has created a worldwide community of millions of customers, many of whom would describe 'being a Harley Davidson owner' as a part of how they fundamentally see, think, and feel about themselves.

Source: 'Ten types of innovation,' www.doblin.com.

EXHIBIT II

THE PROCESS AND BARRIERS TO INNOVATION



Adapted from 'Innovation Process,' www.akri.org.

EXHIBIT III

NEW PRODUCT LAUNCHES AT HARLEY-DAVIDSON

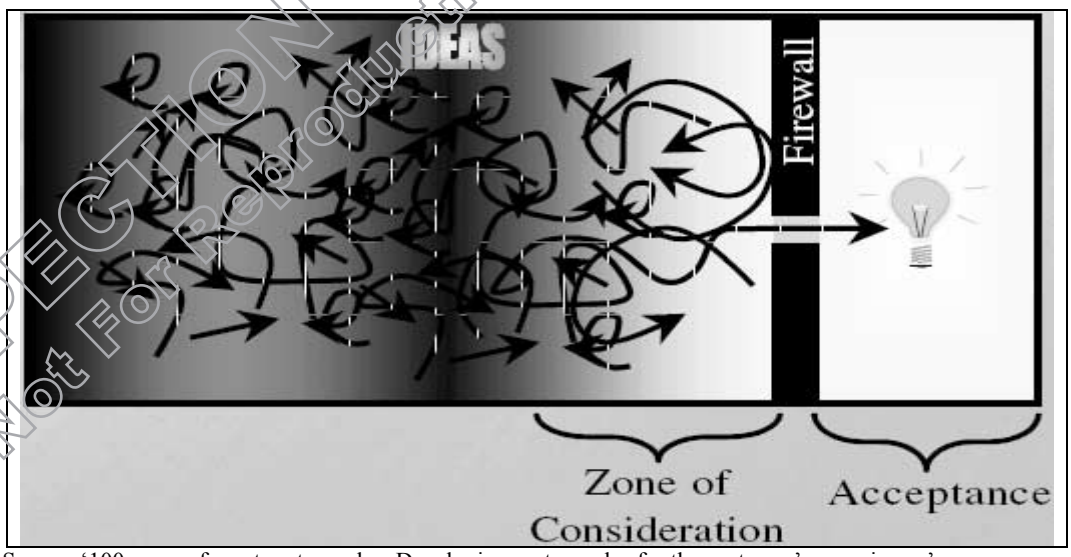
Year	Product		Description
	Motorcycle	Engine	
1903	1903 model	-	This was built to be used for racing. It had a 3-1/8 inch bore and a 3-1/2 inch stroke. It was nicknamed the 'Silent Grey Fellow.'
1909	The V-Twin motorcycle	V-Twin	This engine had higher horsepower
1911	-	F-Head	-
1916	The Eight Valve Racer	-	-
1919	The Sports model	-	This model was known for its unique cylinder configuration.
1921	JD and FD models	74 cubic inch V-Twin	-
1926	Single cylinder motorcycles and models A, AA, B, and BA.	-	Except the single cylinder motorcycles, other motorcycles were available in side valve and overhead engine valve configurations.
1928	JD model	Two Cam	-
1929	D model	45 cubic inch V-Twin	This engine was later called the 'flathead.' It was reportedly so reliable that its variations were available with H-D motorcycles as late as 1972.
1932	The three-wheeled service car	-	This was used as a commercial and police vehicle till the late 1960s.
1936	EL model	-	This 61 cubic inch powered bike, came with increased horse-power and bold styling changes. It was nicknamed the 'Knucklehead.'
1941	FL model	-	-
1942	XA750	-	Specially produced for the army, this motorcycle had horizontally opposed cylinders and shaft drive, designed for desert use.
1947	WR model	-	This came with the flathead engine and was designed to be a racer motorcycle.
1948	-	61 and 74 overhead valve engines	New features added to these engines include aluminum heads and hydraulic valve lifters. This was nicknamed 'Panhead.'
1949	Hydra – Glide models	-	The hydraulic front forks were introduced with this model.
1952	K- model	-	This motorcycle featured a side valve with an integrated engine and transmission to make the vehicle look smaller and sportier.
1957	Sportstar model	-	This model came with a 55 cubic inch overhead valve engine. These bikes were popularly known as the 'Superbikes.'
1958	Duo-Glide	-	The first bike with hydraulic rear suspensions and rear brakes.
1960	H-D Topper motor scooter	-	This was the only scooter model ever produced by the company.
1961	Sprint model	-	-
1964	Servi-Car	-	A three-wheeled motorcycle with an electric starter.
1965	Electra Glide	-	An improvised version of the Duo Glide. It came with an electric starter.
1966	Electra Glide	Shovelhead	The Panhead engine of the Electra Glide motorcycles is replaced with the Shovelhead engine and launched

			in the market.
1970	XR 750 Racer	-	-
1971	Cruiser	-	In response to the customization craze, H-D introduced the FX 1200 Super Glide that combined the sporty look of the XL models and the frame and power of the FL models.
1972	XR 750 with new features	-	These models were made with more reliable and powerful aluminum alloys.
1977	FXS Low Rider	-	-
1979	FXEF Fat Bob	-	This model came with dual gas tanks and featured bobbed fenders, acquiring thereby the name Fat Bob.
1980	FLT model	-	This model was technically superior in that the engine and the transmission were hard bolted together.
	FXB Sturgis model	-	This model had an 80 cubic inch engine.
	FXWG Wide Glide	-	-
1982	FXR/FXRS Super Glide II	-	This model came with a five-speed power train and a welded and stamped frame.
1984	Five new Softail models	1340ccV² Evolution	The Evolution engine was designed to run at greater speeds, than the previous ones. It did not get heated fast, did not release much emission, and was oil tight. The Softail frame was designed in such a way as to hide the motorcycles rear shock absorbers.
1986	Heritage Softail model	-	-
	Sportster model	Evolution V-Twin	The Softail models are launched with the Evolution V-Twin engines.
1990	FLSTF Fat Boy	-	-
1991	FXDB Dyna Glide Sturgis	-	-
1994	VR1000	-	This new model featured a dual overhead cam and a liquid cooled engine.
1995	FLHR Road King	-	-
1999	-	Twin Cam 88	-
	Blast model	-	This sports motorcycle operated with a single cylinder
2000	FXSTD Softail Deuce		
	Softail and Dyna Glide models	Twin Cam 88B	These models came with the Twin Cam 88B, an improved version of the Twin Cam 88 engine.
2001	VRSCA V-Rod	-	This motorcycle design was inspired by the V-R1000 racing motorcycle model. The VRSCA V-Rod featured overhead cams and liquid cooling, fuel injection, and 115 horse-power.
2002	Buell Firebolt	-	-
2003	Lightning XB9S	-	-

Source: www.harley-davidson.com

EXHIBIT IV

THE SWIRL MODEL



Source: '100 years of great motorcycles: Developing motorcycles for the customer's experience,' www.pdma.com.

EXHIBIT V

TYPES OF BINS

BIN 1	BIN 2	BIN 3	BIN 4	BIN 5	BIN 6
Small Follows CPPDM	Small Does not follow standard timing	Small Does not follow standard timing or CPPDM	Medium Follows CPPDM	Medium Does not follow standard timing	Large Follows CPPDM

Adapted from '100 years of great motorcycles: Developing motorcycles for the customer's experience,' ww.pdma.com.

EXHIBIT VI

HARLEY-DAVIDSON – KEY STATISTICS (1986-2002)

Year	World Wide Units Shipments (Units in 000s)		Revenues ($ 000s)	Net Income ($ 000s)
	Harley –Davidson Motorcycles	Buell Motorcycles		
1986	36.7	-	295,322	4,871
1987	43.3	-	342,389	21,215
1988	50.5	-	405,391	23,912
1989	58.9	-	517,006	32,942
1990	62.5	-	624,027	37,830
1991	68.6	-	701,969	36,972
1992	76.5	-	822,929	53,785
1993	81.7	-	933,262	(11,885)
1994	95.8	0.6	1,158,887	104,272
1995	105.1	1.4	1,350,466	112,480
1996	118.8	2.8	1,531,227	166,028
1997	132.3	4.4	1,762,569	174,070
1998	150.8	6.3	2,063,956	213,500
1999	177.2	7.8	2,452,939	267,200
2000	204.6	10.2	2,943,346	347,713
2001	234.5	9.9	3,406,786	437,746
2002	263.7	10.9	4,090,970	580,217

Source: www.harley-davidson.com.