Abstract. In the digital era, an image can be used to hide secret message during the communication of two parties, using image steganography. The image steganography method based on the combination of LSB Substitution and PVD method has been introduced for increasing the payload of the stego-image. We proposed an image steganography method based on the modified combination of LSB Substitution and PVD to improve the *imperceptibility* of the stego-image. We evaluate our method by comparing the performance of the proposed method with Swain's method. Using the proposed method, the maximum PSNR of the stego-image for 28.75 kB of payload is 50.052 dB, while using Swain's method is 38.785 dB. However, the proposed method needs more time for executing the process than the other.