**Online Appendix for**

**Panoramic Sales Insight: Using Explainable Deep Learning to Improve the Effectiveness of Flash Sales**

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**Appendix C. Comparison of Revenue Forecasting and Real Values**

图表, 折线图

描述已自动生成

**Fig. C1.** Absolute difference between the predicted values and the true values for each model

In Appendix C1 online, this study randomly selects 20 data points from the model and compares the actual predicted revenue with the true revenue. LSTM, RNN, GRU, ANN, and FCN are also selected as the comparison groups. The results show that the DNN architecture is superior to the other deep learning architectures in the vast majority of the 20 cases. For some products, the predicted revenue is close to the actual revenue.

**Appendix D. Comparison of Visual Features between Best-Selling and Slow-Selling Products**

**Tables D1**

Visual features of best-selling products

|  |  |  |
| --- | --- | --- |
| Secondary category | Image | Image features |
| Women Tops |  | White, Casual, Plain, Shirt, Button, Collar, Long Sleeve, Regular Sleeve, Regular, Regular Fit, Slight Stretch, Polyester. |
| Women Tops |  | White, Casual, Plain, Round Neck, Twist, Eyelet Embroidery, Short Sleeve, Batwing Sleeve, Asymmetrical, Regular, Loose, Medium Stretch, Fabric, 95% Polyester, 5% Elastane |
| Men Clothing |  | Red, Street, Figure, Slogan, Round Neck, Short Sleeve, Drop Shoulder, Regular, Regular Fit, Slight Stretch, Fabric, Half Sleeve |

**Tables D2**

Visual features of slow-selling products

|  |  |  |
| --- | --- | --- |
| Secondary category | Image | Image feature |
| Men Tops |  | Mint Blue, Casual, Plain, Shirt, Button Front, Stand Collar, Short Sleeve, Regular Sleeve, Regular Fit, Regular, Single Breasted |
| Women Bottoms |  | Black, Boho, Casual, Floral, Animal, Halloween, Plants, Wide Leg, Elastic Waist, Natural, Long, Loose, Navy Blue, Paisley |
| Men Plus Size Clothing |  | Multicolor, Casual, Ombre, All Over Print, Round Neck, Sleeveless, Regular, Regular Fit, Slight Stretch, Blue, Scoop Neck. |

**Online Appendix E. Comparison of Text Description and Review Keywords between Best-Selling and Slow-Selling Products**

**Tables E1**

Example of text description and review keywords for best-selling and slow-selling products

|  |  |  |
| --- | --- | --- |
| Product name | Review keywords | Text description |
| **Best-selling products in flash sales** | | |
| SHEIN VCAY Plus Size Women's Casual Print Stand Collar Long Shirt | Recommend, clear, flattering, elegant, lovely | White, boho, button, sheer, split, shirt, floral, short sleeve, stand collar, flounce sleeve, slit, regular, loose, non-stretch, woven fabric, 100% polyester, machine wash, do not dry clean, wash with the soft detergent, semi-sheer, blue, embroidery, plants, flared, navy blue, apricot, ruffle hem, red |
| SHEIN EZ Wear Casual Letter Printed Cropped T-Shirt for Summer | Recommend, cute, happy, compliments, elegant | Black, casual, letter, round neck, backless, short sleeve, regular sleeve, crop, regular fit, slight stretch, fabric, 95% polyester, 5% elastane, machine wash or professional dry clean, white, slogan |
| SHEIN Swim Summer Beach Ladies' Floral Print Swimsuit Set | Supporting, fan, fav, playing, solid | Swimsuit fabric, 85% polyester, 15% elastane, pink, cute, floral, ruffle, twist, high waist, wireless bra, straps, high stretch, machine wash, do not dry clean |
| **Slow-selling products in flash sales** | | |
| SHEIN LUNE Plus Size Patchwork Graphic Short Sleeve Casual T-Shirt for Summer | Recommend, sure, dislike, leave, compliments | Multicolor, casual, color block, patchwork, all over print, round neck, short sleeve, batwing sleeve, regular, regular fit, high stretch, fabric, 95% polyester, 5% elastane, machine wash, do not dry clean, wash with the soft detergent, purple, geometric |
| SHEIN LUNE Women's Summer Asymmetrical Contrast Lace Round Neck Short Sleeve Casual T-Shirt | Happy, ignore, bright, flattering, tops | Green, casual, color block, asymmetrical neck, asymmetrical, contrast lace, raglan sleeve, short sleeve, regular, regular fit, medium stretch, knitted fabric, 66% polyester, 28% viscose, 6% elastane, machine wash or professional dry clean, white |
| SHEIN Swim SPRTY Summer Beach Sports Color block Bikini Set | Cutest, complain, tired, struggled, beauty | Swimsuit fabric, 82% polyester, 18% elastane, black and white, casual, color block, striped, zipper, contrast binding, square neck, high stretch, hand wash or professional dry clean, high waist |

**Online Appendix F. Most Common and Least Common Text Descriptions and Review Keywords**

**Tables F1**

Most common and least common text descriptions and comments

|  |  |  |  |
| --- | --- | --- | --- |
| **Most common** | **N-gram score** | **Least common** | **N-gram score** |
| **Comment emotion keywords** | | | |
| Love | 0.3540 | Reach | 0.0001 |
| Cute | 0.3040 | Stress | 0.0001 |
| Like | 0.1406 | Thankful | 0.0001 |
| Super | 0.1160 | Torn | 0.0001 |
| Nice | 0.1055 | Trick | 0.0001 |
| Fit | 0.0973 | Truly | 0.0001 |
| Perfect | 0.0803 | Worst | 0.0001 |
| Great | 0.0595 | Awful | 0.0001 |
| Comfortable | 0.0562 | Comforting | 0.0001 |
| Top | 0.0510 | Defects | 0.0001 |
| **Text description** | | | |
| Wash | 0.2583 | Style zinc | 0.0001 |
| Stretch | 0.2350 | Suede | 0.0001 |
| Dry | 0.2293 | Suede warm | 0.0001 |
| Clean | 0.2283 | Suit | 0.0001 |
| Polyester | 0.2283 | Suit alcohol | 0.0001 |
| Dry clean | 0.2282 | Sun | 0.0001 |
| No | 0.1946 | Sun camel | 0.0001 |
| Regular | 0.1908 | Super | 0.0001 |
| Fabric | 0.1882 | Super high | 0.0001 |
| Elastane | 0.1849 | Support baby | 0.0001 |