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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SU-MING WU and SANDEEP TIWARI

Appeal 2018-000212
Application 13/906,824[1]
Technology Center 3600

Before JOSEPH L. DIXON, JAMES W. DEJMEK, and STEPHEN E. BELISLE, *Administrative Patent Judges*.

DEJMEK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1–20. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We affirm.

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[1] Appellants identify Oracle International Corporation as the real party in interest. App. Br. 3.

STATEMENT OF THE CASE

Introduction

Appellants' disclosed and claimed invention generally relates to forecasting demand transference effects. Spec. ¶¶ 1, 4. According to the Specification, demand transference, within the context of a retail store, "generally involves two types of effects: those resulting from the removal of a[] SKU [(stock keeping unit)] from an assortment, and those resulting from the addition of a SKU to the assortment." Spec. ¶ 13. The Specification describes that in deciding what items (i.e., SKUs) a store should carry, it is desirable to know the demand transference that will result from adding or removing SKUs from the available assortment of SKUs. Spec. ¶ 3.

Claim 1 is representative of the subject matter on appeal and is reproduced below:

> 1. A non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, cause the processor to forecast demand transference for a category of merchandise, the forecasting comprising:
>
> receiving for the category of merchandise de-promoted sales data for each of a plurality of stock keeping units (SKUs), similarities between each pair of SKUs in the category, and SKU-store ranging information;
>
> determining a sales indices of all SKUs in the category across the de-promoted sales data for the category;
>
> determining Total Assortment Effect (TAE) variable quantities for the SKUs across share intervals in the de-promoted sales data based on the sales indices and the similarities;
>
> analyzing at least the similarities between each pair of SKUs in the category, the sales indices, and ratios of the share intervals to create an analysis of a change in SKU availability;
>
> transforming the analysis into a predictive single parameter-based demand transference model; and

> receiving a change of assortment of the plurality of SKUs and forecasting demand transference effects from the change of assortment using the predictive single parameter based demand transference model.

The Examiner's Rejection

Claims 1–20 stand rejected under 35 U.S.C § 101 as being directed to patent-ineligible subject matter. Final Act. 2–9.

ANALYSIS[2]

Appellants dispute the Examiner's conclusion that the pending claims are directed to patent-ineligible subject matter. App. Br. 6–16; Reply Br. 2–3. In particular, Appellants argue the Examiner erred in concluding the claims are directed to the abstract idea of "target marketing," and contend the Examiner explain how the alleged abstract idea corresponds to other concepts identified as abstract by the courts. App. Br. 7–8. Rather, Appellants assert the claims are directed to "forecasting demand transference for a category of merchandise." App. Br. 9. Moreover, Appellants assert the claims recite "significantly more" than the alleged abstract idea. App. Br. 14–16.

The Supreme Court's two-step framework guides our analysis of patent eligibility under 35 U.S.C. § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014). If a claim falls within one of the statutory

[2] Throughout this Decision, we have considered the Appeal Brief, filed April 26, 2017 ("App. Br."); the Reply Brief, filed October 9, 2017 ("Reply Br."); the Examiner's Answer, mailed August 8, 2017 ("Ans."); and the Final Office Action, mailed December 30, 2016 ("Final Act."), from which this Appeal is taken.

categories of patent eligibility (i.e., a process, machine, manufacture, or composition of matter) then the first inquiry is whether the claim is directed to one of the judicially recognized exceptions (i.e., a law of nature, a natural phenomenon, or an abstract idea). *Alice*, 573 U.S. at 217. If so, the second step is to determine whether any element, or combination of elements, amounts to significantly more than the judicial exception. *Alice*, 573 U.S. at 217.

Although the independent claims each broadly fall within the statutory categories of patentability, the Examiner concludes the claims are directed to a judicially recognized exception—i.e., an abstract idea. Final Act. 2–4. In particular, the Examiner concludes the claims are directed to the abstract idea of "target marketing," which is similar to concepts involving human activity relating to commercial practices and concepts relating to advertising, marketing, and sales activities. Final Act. 3–5. Further, the Examiner concludes the claims do not recite significantly more to transform the abstract idea into a patent-eligible application. Final Act. 6–8. Instead, the Examiner finds the claims recite generic computer functions/elements performing generic computer functions that are well-understood, routine, and conventional. Final Act. 6–9. The Examiner also determines the claims do not recite any inventive concept such as improving the performance of a computer or any other technology. Final Act. 6–8.

Instead of using a definition of an abstract idea, "the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided." *Amdocs (Isr.) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (citing *Elec. Power Grp., LLC v.*

Alstom S.A., 830 F.3d 1350, 1353–54 (Fed. Cir. 2016)); *accord* United States Patent and Trademark Office, July 2015 Update: Subject Matter Eligibility 3 (July 30, 2015), https://www.uspto.gov/sites/default/files/documents/ieg-july-2015-update.pdf (instructing Examiners that "a claimed concept is not identified as an abstract idea unless it is similar to at least one concept that the courts have identified as an abstract idea"). As part of this inquiry, we must "look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter." *Affinity Labs of Tex., LLC v. DirecTV, LLC*, 838 F.3d 1253, 1257–58 (Fed. Cir. 2016) (citations omitted).

The Supreme Court has concluded "if a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is [patent-ineligible subject matter]." *Parker v. Flook*, 437 U.S. 584, 595 (1978) (quoting *In re Richman*, 563 F.2d 1026, 1030 (CCPA 1977). Additionally, our reviewing court has concluded, absent additional limitations, "a process that employs mathematical algorithms to manipulate existing information to generate additional information is not patent eligible." *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014). Further, "analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, [are] essentially mental processes within the abstract-idea category." *Elec. Power*, 830 F.3d at 1354; *see also Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146 (Fed. Cir. 2016). "[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter." *Bancorp Servs., L.L.C. v. Sun Life Assurance*

Co. of Can. (U.S.), 687 F.3d 1266, 1278 (Fed. Cir. 2012). Additionally, our reviewing court has concluded a "process that start[s] with data, add[s] an algorithm, and end[s] with a new form of data [is] directed to an abstract idea." *RecogniCorp, LLC v. Nintendo Co., LTD.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017).

Further, merely combining several abstract ideas does not render the combination any less abstract. *RecogniCorp*, 855 F.3d at 1327 (Fed. Cir. 2017) ("Adding one abstract idea . . . to another abstract idea . . . does not render the claim non-abstract."); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1094 (Fed. Cir. 2016) (determining the pending claims were directed to a combination of abstract ideas).

Although we agree with Appellants that the claims are directed to forecasting demand transference for a category of merchandise, this is essentially a method of calculating, using a mathematical formula, demand transference effects. *See Flook*, 437 U.S. at 595. For example, in claim 1, the recited steps of determining a sales indices of all SKUs in the category; determining Total Assortment Effect (TAE) variable quantities; analyzing the similarities between pairs of SKUs, the sales indices, and ratios of share intervals to create an analysis of change; transforming the analysis into a transference model; and forecasting demand transference effects are performing mathematical operations on received data (e.g., de-promoted sales data, similarities, SKU-store ranging information, and a change of assortment of the SKUs). *See* Spec. ¶¶ 23–48. Specifically, the TAE variable is defined by the equation:

$$TAE\ (i,s,w) = \sum_{j \in \alpha(s,w), j \neq i} sim(i,j) \cdot index\ (j,s,w),$$

where $sim(i,j)$ is the similarity of item i to item j, and $index\ (j,s,w)$, the SKU index, is a measure of the rate of sale of j at store s relative to all other SKUs selling at store s over week w. Spec. ¶¶ 25–26. Further, the Specification describes the demand transference model as a ratio model that "instead of modeling sales units directly, it uses sales units shares." Spec. ¶ 33. The "model examines how the shares of SKUs change when the assortment changes, and models the changes as a power-law model in terms of TAE" and may be represented by:

$$\frac{D(i,s,w)}{D(i,s',w')} \sim \left(\frac{1+TAE(i,s,w)}{1+TAE(i,s',w')}\right)^{\alpha}$$

Spec. ¶ 34. The Specification describes that α is estimated through a regular log-linear regression. Spec. ¶¶ 40–44. Thus, because the claim is essentially a method of calculating using mathematical formulae, we conclude the claim is directed to an abstract idea.

Additionally, we note the limitations recited in the dependent claims do not change the character of the claims as a whole from the abstract idea of forecasting demand transference for a category of merchandise—i.e., an abstract idea.

Because we determine the claims are directed to an abstract idea or combination of abstract ideas, we analyze the claims under step two of *Alice* to determine if there are additional limitations that individually, or as an ordered combination, ensure the claims amount to "significantly more" than the abstract idea. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72–73, 77–79 (2012)). An inventive concept "cannot be furnished by the unpatentable law of nature (or natural phenomenon or abstract idea) itself." *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016). Instead, an "inventive

concept" is furnished by an element or combination of elements that is recited in the claim *in addition to* the judicial exception and sufficient to ensure the claim as a whole amounts to significantly more than the judicial exception itself. *Alice,* 573 U.S. at 217–18 (citing *Mayo,* 566 U.S. at 72–73); *see BSG Tech LLC v. BuySeasons, Inc.,* 899 F.3d 1281, 1290 (Fed. Cir. 2018) (explaining that the Supreme Court in *Alice* "only assessed whether the claim limitations other than the invention's use of the ineligible concept to which it was directed were well-understood, routine and conventional"). Thus, it is axiomatic that "[i]f a claim's only 'inventive concept' is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea." *BSG Tech,* 899 F.3d at 1290–91 (citing *Berkheimer,* 881 F.3d at 1370).

Here, we agree with the Examiner that the additional limitations, separately, or as an ordered combination, do not provide meaningful limitations (i.e., do not add significantly more) to transform the abstract idea into a patent eligible application. Final Act. 6–9; Ans. 10–13. For example, the limitations recited in addition to the abstract idea relate to receiving data—such as de-promoted sales data, similarities between each pair of SKUs, SKU-store ranging information and a change of assortment of the plurality of SKUs. Receiving data to be used as part of the mathematical operations (i.e., abstract idea) does not amount to "significantly more" to transform the abstract idea into a patent-eligible application. *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014) ("That a computer receives and sends the information over a network—with no further specification—is not even arguably inventive.").

Nor do the dependent claims recite significantly more. For example, the dependent claims define how the single parameter is determined (i.e., using single variable linear regression) (claim 2); notifying a user if the value does not meet a bound (claim 3), *see Elec. Power*, 830 F.3d at 1354 (indicating that merely presenting the results of the analysis of information is an abstract, ancillary part of the analysis); receiving additional data (claim 4); refining the received change of assortments as either additions or removals of SKUs (claim 5); and providing the particular equations for the TAE variable and demand transference model (claims 6 and 7).

Further, we disagree with Appellants that using a single parameter-based demand transference model provides improvements to the functioning of the computer itself. Reply Br. 2. Rather, Appellants' invention here is quite unlike the "self-referential table," which was a "specific improvement to the way computers operate," held to be not abstract in *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016), and the "specific asserted improvement in computer animation, i.e., the automatic use of rules of a particular type" held to be not abstract in *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016).

Appellants' argument (*see* App. Br. 15) that the claims recite significantly more than the alleged abstract idea (i.e., that the claims recite a non-conventional and non-generic arrangement of known, conventional pieces) because there are no pending rejections under §§ 102 or 103, is also unavailing. Subject-matter eligibility under 35 U.S.C. § 101 is a requirement separate from other patentability inquiries. *See Mayo*, 566 U.S. at 90 (recognizing that the § 101 inquiry and other patentability inquiries "might sometimes overlap," but that "shift[ing] the patent-eligibility inquiry

entirely to these [other] sections risks creating significantly greater legal uncertainty, while assuming that those sections can do work that they are not equipped to do"); *see also Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981) ("The 'novelty' of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter."); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1340 (Fed. Cir. 2017) ("Eligibility and novelty are separate inquiries.").

Additionally, to the extent Appellants contend the claims do not preempt every application of the idea of data recognition and storage (App. Br. 13–14), we are unpersuaded of Examiner error. "'[W]hile preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.'" *FairWarning IP*, 839 F.3d at 1098 (quoting *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015); *see also OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) ("[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract."). Further, "[w]here a patent's claims are deemed only to disclose patent ineligible subject matter under the *Mayo* framework, as they are in this case, preemption concerns are fully addressed and made moot." *Ariosa*, 788 F.3d at 1379.

For the reasons discussed *supra*, we are unpersuaded of Examiner error. Accordingly, we sustain the Examiner's rejection of independent claim 1 under 35 U.S.C. § 101. For similar reasons, we sustain the Examiner's rejection of independent claims 8 and 15, which recite similar limitations. Additionally, we sustain the Examiner's rejection of claims 2–7,

9–14, and 16–20, which depend directly or indirectly therefrom and were not argued separately. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2016).

DECISION

We affirm the Examiner's decision rejecting claims 1–20 under 35 U.S.C. § 101.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED